United States Court of Appeals
for the
District of Columbia Circuit

TRANSCRIPT OF RECORD

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Court of Appeals, District of Columbia

OCTOBER TERM, 1909.

No. 2017.

596

CHRISTIAN F. DILG, APPELLANT,

vs.

EDWARD B. MOORE, COMMISSIONER OF PATENTS.

APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA

FILED APRIL 30, 1909.

COURT OF APPEALS OF THE DISTRICT OF COLUMBIA

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In the Court of Appeals of the District of Columbia.

No. 2017.

Christian F. Dilg, Appellant,
vs.
Edward B. Moore, Commissioner of Patents.

a Supreme Court of the District of Columbia.

In Equity. No. 26013.

Christian F. Dilg, Complainant,
vs.
Edward *M.* Moore, Commissioner of Patents, Defendant.

United States of America,
District of Columbia, ss:

Be it remembered, that in the Supreme Court of the District of Columbia, at the City of Washington, in said District, at the times hereinafter mentioned, the following papers were filed and proceedings had in the above entitled cause, to wit:

1 In the Supreme Court of the District of Columbia, 5th Day of February, 1906.

In Equity. No. 26013.

Christian F. Dilg, Plaintiff,
vs.
Frederick I. Allen, as Commissioner of Patents of the United States, Defendant.

To the Supreme Court of the District of Columbia, holding an Equity Court:

The Plaintiff states as follows:

1. He is a citizen of the United States of America, and of the City, County and State of New York, and brings this suit in his own right as inventor and applicant; as hereinafter more fully set forth.

2. The defendant, Frederick I. Allen (F. I. Allen), is the Commissioner of Patents of the United States of America, a citizen of the United States, and an official resident of the City of Washington, in

the District of Columbia, and he is sued in this action in his official capacity as said commissioner.

3. That heretofore, and prior to the 18th day of September, 1897, your orator was the original, first and sole inventor of certain new and useful improvements in ball bearings, more specifically ball bearing or holding devices, hereinafter more fully described, which
had not been known or used by others before his said inven-
2 tion, and which at the time of his application for letters
patent as hereinafter set forth had not been for more than
two years in public use or on sale anywhere, had not been patented or described in any printed publication in this or any foreign country, and had not and have not been abandoned.

4. That the improvements in ball bearings invented by said Christian F. Dilg as aforesaid comprise broadly a holder having a series of ball-bearing points for retaining balls. In more specific connection the improvements comprise a base upon which balls are adapted to rest, having a series of members mounted thereon for preventing said balls from becoming disengaged from the ball holding device in an outwardly or a sidewise direction. In addition thereto, if desired, members may be incorporated for assisting in preventing the disengagement of said balls in an inward direction toward the centre of said device. By means of said combination of elements a device is provided which is simple in construction, inexpensive to manufacture, occupies a minimum of space when packed for shipment, and which operates in a convenient and efficient manner.

5. That prior to said invention no ball bearing device had been known, used, described, or in existence at any time anywhere, which embodied the combinations of elements herein set forth, to be described more fully hereinafter, or which accomplished the same or as good results, or in the same manner as plaintiff's either in respect to efficiency in practical use, convenience in handling, or expense of manufacture, or in any other useful respect.

6. That said Christian F. Dilg, long prior to said 18th day of September, 1897, as well as certain other persons under his direction and in connection with him, had experimented and endeavored to discover or produce a ball bearing device which, like that involved herein, was simple and inexpensive, occupied but little space and
operated efficiently, but none of their efforts in this direction
3 was successful until said Christian F. Dilg invented the im-
provements set forth in the application hereinafter men-
tioned, which he avers are in every way novel, useful and satisfactory.

7. That said Christian F. Dilg, having perfected his improvements, did on the 18th day of October, 1897, duly file in the United States Patent Office at Washington a complete application for letters patent of the United States therefor, Serial No. 655,652, as by a duly authenticated copy thereof ready in court to be produced will more fully and at large appear.

8. That thereafter the primary examiner having charge of said application aforesaid did duly require division, and thereafter, on the 16th day of February, 1900, said Christian F. Dilg did duly

file in the patent office of the United States a complete application for letters patent of the United States, Serial No. 5,434, in compliance with said requirement of division, as by a duly authenticated copy of said application ready in court to be produced will more fully and at large appear.

9. That said improvements set forth in said application last mentioned comprise, broadly considered, a ball retaining device for ball bearings having a ring-shaped base from which springs a series of standards having sector-shaped or flaring angularly-arranged extensions. This particular series springs from one edge only of said base. If desired, another series of standards or broken rib for assisting in retaining the balls before placing said device in operative position in a socket or about the hub of a wheel may spring from another edge or other portion of said base, this, however, being auxiliary to the main invention, a new and useful result being attained without its incorporation. While it is desirable to have the balls completely retained in said device at all points, without necessity for interposing an additional member or members to act as an abutment to inward movement of the disengagement of the balls toward the centre of said device, which result is accomplished
4 by having the sides of adjacent sector-shaped or flaring top portions previously mentioned converge toward the centre of said device, the same is unnecessary so far as the invention, broadly considered, is concerned.

10. That said primary examiner allowed certain claims in said last-mentioned application specifying two series of standards, finally rejecting certain other claims specifying *a* series contained in said application which said letter claims are as follows:

"14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

"15. A bell-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

"16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

11. That thereupon said Christian F. Dilg duly appealed from the decision of said primary examiner rejecting said claims above set forth; and duly pursued his several appeals, appealing finally to the Court of Appeals of the District of Columbia.

12. That said Court of Appeals of the District of Columbia finally rejected said claims above set forth, and affirmed the decision of the commissioner of patents refusing to issue letters patent containing

said claims, said decision of said commissioner of patents being dated February 24, 1904.

5 13. That said Court of Appeals of the District of Columbia, in its opinion affirming the decision of the commissioner of patents as aforesaid (115 O. G., 1068), affirmed said decision of the said commissioner solely upon the ground that the application of said applicant did not disclose any basis upon which said claims could be predicated, and that, accordingly, the claims being new matter, he did not have the right to make them, holding: 1st, that applicant's construction is inoperative without two series of ball-retaining standards; 2nd, that the said claims involved in said appeal specify that the ball-retaining device of the application carries only one series of standards; and, 3rd, that the top pieces or angularly-arranged flanges or extensions are not sector-shaped.

14. That the Court of Appeals of the District of Columbia, and all tribunals subordinate thereto, which acted upon the said claims above set forth of said applicant, erred in their understanding in respect to all of said grounds and holdings set forth in the paragraph last above; and that the contrary of said grounds and holdings is the fact. The complete record of said last-named application and all the facts bearing thereon have at no time been before said Court of Appeals, or, upon information and belief, before the commissioner of patents and the board of examiners-in-chief of the patent office of the United States, and said misunderstanding above noted is largely attributable to this fact.

15. That neither the said Court of Appeals nor any of the other of said tribunals either suggested, or decided that said claims above set forth were not patentable in view of the state of the art; and plaintiff alleges that said claims are patentable, and that basis for their introduction has at all times been disclosed in, and intended so to be since filing, the original or parent application heretofore mentioned.

16. That said ball-retaining device invented by said Christian F. Dilg has gone into general use; that it is supplanting all other ball-bearing devices; that the sales thereof have been large and are steadily increasing; and that there is a constantly growing demand therefor.

6 17. That the plaintiff in this action is entitled to the relief provided by Section 4915 of the Revised Statutes of the United States, having complied in all respects with the requirements of said act, and being otherwise entitled thereto.

Wherefore your orator prays that this honorable Court may adjudge and decree that your orator, the said Christian F. Dilg, is the first, original and sole inventor of the invention set forth and claimed in his said application and in the claims above set forth; that he has the right in law to make said claims in his said application; and that your orator, the said Christian F. Dilg, is the owner of such invention and is entitled according to law to receive a patent for the said invention as specified in the said claims of the said application above set forth, or for any part thereof, as the facts in the case may appear.

And may it please this honorable Court to grant unto your orator a writ of subpœna issuing out of and under the seal of this court, directing to Frederick I. Allen (F. I. Allen), the commissioner of patents of the United States, commanding him by a day certain to appear and answer to the bill of complaint herein and to do and receive what to this honorable Court may seem meet in the premises.

And may it please this honorable Court to grant unto your orator such other or further relief as may be proper in the premises.

And your orator will ever pray.

CHRISTIAN F. DILG.

WARFIELD & DUELL,
Solicitors and Counsel for Plaintiff,
220 *Broadway, New York City.*

STATE OF NEW YORK,
City and County of New York, ss:

On this 2nd day of February, 1906, before me personally appeared Christian F. Dilg, to me known and known to me to be the plaintiff described in and who executed the foregoing bill of complaint, who having been by me first duly sworn, did depose 7 and say: that he had read the foregoing bill of complaint by him subscribed, and knew the contents thereof, and that the facts alleged therein are true of his own knowledge except as to those matters stated therein to be alleged upon information and belief, and that as to such matters he is informed and verily believes the same to be true.

CHRISTIAN F. DILG.

Subscribed and sworn to before me this 2nd day of February, 1906.

[SEAL.] WILLIAM H. LEVY,
Notary Public, New York County.

In the Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG
vs.
FREDERICK I. ALLEN, as Commissioner of Patents.

The Answer of the Defendant, Frederick I. Allen, Commissioner of Patents, to the Bill of Complaint of the Above-named Complainant.

To the Honorable the Justices of the Supreme Court of the District of Columbia:

Defendant now and at all times hereafter reserving unto himself all and all manner of benefit of exception which may be had or taken to the manifold errors, imperfections, and uncertainties of the said bill of complaint, for answer thereunto or to such parts and so much thereof as he is advised that it is material or necessary for him to make answer unto, answering says:

8 1. Defendant admits upon information and belief that the allegations made in paragraph 1 of the bill of complaint are true.

2. Defendant admits that he is the Commissioner of Patents of the United States of America, a citizen of the United States, and an official resident of the City of Washington in the District of Columbia.

3. Defendant has no knowledge of the truth or falsity of the allegations made in paragraph 3 of the bill of complaint, but states that, so far as he is aware, knowledge of the improved ball bearings described by the claims quoted in paragraph 10 of the bill of complaint, was first communicated to the patent office by the application for patent of Henry B. Keiper, which was filed December 23, 1897, and upon which patent No. 686,617 was issued November 12, 1901, containing the aforesaid claims as defining the invention of said Keiper. Defendant therefore denies that the allegations made in paragraph 3 of the bill of complaint are true.

4. Defendant denies the allegations of paragraph 4 of the bill of complaint in so far as these allegations purport to convey a correct impression of the device disclosed by complainant's applications for patent Nos. 655,652 and 5,434, which device is the only device of consequence in the connection stated. Denying more specifically, the defendant says that the words "if desired" in the sentence "In addition thereto, if desired, members may be incorporated for assisting in preventing the disengagement of the balls in an inward direction toward the centre of the device" are misleading and improper for the reason that in the aforesaid applications for patent Nos. 655,652 and 5,434, the members shown for preventing inward disengagement of the balls are essential.

5. Defendant has no sufficient information upon which to base belief in the truth of the allegations appearing in paragraph 5 of the bill of complaint, and he therefore denies that these allegations are true. Defendant avers that improvements in ball bear-
9 ings of the same general character as those of the complain-
ant were described and patented by others before October 18, 1897, the date of complainant's application for patent No. 655,652, as is shown by patents of Simonds, January 5, 1892, No. 466,443; Wogan, June 12, 1894, No. 521,399; Pierce, May 5, 1896, No. 559,537; Strauss, February 2, 1897, No. 576,500.

6. Defendant has no sufficient information upon which to base a belief in the truth of the allegations appearing in paragraph 6 of the bill of complaint and he therefore denies that these allegations are true.

7. Defendant admits that the complainant filed an application for patent upon alleged improvements in ball bearings upon October 18, 1897, serial No. 655,652, but denies that this application contained any basis for the claims set forth in paragraph 10 of the bill of complaint.

8. Defendant admits the allegations contained in paragraph 8 of the bill of complaint to be true.

9. Defendant admits that complainant's application for patent, No. 5,434, discloses a ball retaining device for ball bearings having a ring-shaped base from which springs a series of standards having angularly arranged extensions, and he admits that this particular series springs from one edge only of said base, but defendant denies that the said angularly arranged extensions are sector-shaped or flaring. Defendant admits that in said ball retaining device disclosed by complainant's application for patent No. 5,434, another series of standards may spring from the outer edge of the base thereof, for assisting in retaining the balls in place, and defendant avers that said additional series must be used in the device disclosed in said application. Defendant denies that the latter series of standards may be dispensed with and he denies that it may be used only "if desired." He also denies that the latter series of standards is auxiliary to a main invention in the device disclosed by said application of complainant, and he denies that a new and useful result is attained in said device without the incorporation of said latter
10 series of standards. Defendant further denies that the sides
of the angularly arranged extensions from the first series of standards converge toward the center thereof in the said device of complainant's application No. 5,434, and he denies that it is unnecessary to have the balls completely retained in said device so far as the same is to be considered a subject of invention in said application.

10. Defendant admits that certain claims were allowed by the primary examiner in the complainant's application No. 5,434, and that the claims quoted in paragraph 10 of complainant's bill were rejected.

11. Defendant admits the allegations contained in paragraph 11 of the bill of complaint to be true.

12. Defendant admits the allegations contained in paragraph 12 of the bill of complaint to be true, except that the date given there as February 24, 1904, should be April 4, 1904.

13. The allegations contained in paragraph 13 of the bill of complaint are admitted to be true, except as to the holdings of the court numbered therein 1st, 2nd and 3rd, which are loosely and inaccurately stated and which are therefore denied. It is admitted however, that the court did hold:

1st, that "the construction disclosed required the employment of both series of standards in order to retain the balls."

2nd, that "all the claims in controversy have as an element a series of standards or integral parts extending from one edge of the annular base portion only," and

3rd, that the appellant injects into the specification that the top pieces are "sector shaped or flaring," whereas "he originally disclosed only straight sided extensions."

14. Defendant denies the allegations contained in paragraph 14 of the bill of complaint, except the allegation that the complete record of the application was not before the Court of Appeals, which allegation is admitted. The defendant avers that the transcript of

11 the record certified by the patent office to the Court of Appeals comprised all portions of the entire record of the application which the complainant by his attorney requested should be sent up and respondent further avers that the complainant by his attorneys stipulated with the attorney for the defendant that only such papers should be included in the transcript of the record made up for the court which were actually included. The defendant denies that the portions of the record which were not before the Court of Appeals have any substantial bearing upon the questions decided.

15. Defendant admits that the claims set forth in paragraph 10 of the bill were not held by the tribunals passing upon complainant's applications to be unpatentable in view of the state of the art. Defendant admits that said claims may be patentable when founded on a proper disclosure, but he denies that said claims are patentable to complainant in the applications hereinabove mentioned, and defendant denies that basis for the introduction of these claims has at all times been disclosed in the original or parent application.

16. Defendant has no sufficient information upon which to base a belief in the truth of the allegations contained in paragraph 16 of the bill of complaint, and he therefore denies that said allegations are true.

17. Defendant denies the allegations contained in paragraph 17 of the bill of complaint are true.

Defendant further answering denies each and every allegation contained in the said bill of complaint not herein and hereby well and sufficiently denied, traversed and avoided or confessed. All of which matters and things, he is willing to prove as to your Honors may seem meet, and prays to be hence dismissed with his reasonable costs and charges in this behalf wrongfully sustained.

(Sgd.) FREDERICK I. ALLEN,
Commissioner of Patents.

DISTRICT OF COLUMBIA:

Sworn to and subscribed before me on the 2nd day of April, 1906.
(Sgd.) WM. H. DE LACY,
Notary Public in and for the District of Columbia.

12 *Replication.*

Filed April 27, 1906.

In the Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG
vs.
FREDERICK I. ALLEN, as Commissioner of Patents.

The Replication of Christian F. Dilg, Complainant, to the Answer of Frederick I. Allen, as Commissioner of Patents, Defendant.

This repliant, saving and reserving unto himself now and at all times hereafter, all and all manner of benefit and advantage of exception which may be had or taken to the manifold insufficiencies of the said answer, for replication thereunto says: That he will aver, maintain and prove his said bill of complaint to be true, certain and sufficient in law to be answered unto, and that the said answer of the said defendant is uncertain, untrue and insufficient to be replied unto by this repliant; without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in law to be replied unto, and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied is true. All which matters and things this repliant is and will be ready to aver, maintain and prove as this Honorable Court shall direct, and humbly prays as in and by his said bill he has already prayed.

WARFIELD & DUELL,
Solicitors and of Counsel for Complainant.

New York, N. Y., April 27, 1906.

13 Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG, Complainant,
vs.
FREDERICK I. ALLEN, as Commissioner of Patents, Defendant.

Testimony Taken and Proceedings Had on Behalf of Complainant in Accordance with the 67th Rule in Equity as Amended, the Statutes, Rules, and Regulations in that Behalf Made and Provided, and Pursuant to Agreement of Counsel, Before H. M. Seamans, Notary Public and Special Examiner, by Consent, on Tuesday, October 23, 1906, at the Office of Duell, Warfield & Duell, 60 Wall Street, New York City, Beginning at 10 a. m.

Appearances.—For defendant, Fairfax Bayard, Esq.; for complainant, H. S. Duell, Esq.
Special Examiner, H. M. Seamans.

Counsel for complainant offers in evidence a copy of the transcript of record printed by the Clerk of the Court of Appeals of the District of Columbia in the matter of the application of Christian F. Dilg, Serial No. 5434, on appeal from the Commissioner of Patents, in the Court of Appeals for the District of Columbia, October Term, 1904, Patent Appeal Docket No. 272, filed July 2, 1904, and the same is received and marked "Complainant's Exhibit A, Transcript of Record before Court of Appeals." It is agreed that Exhibit A be regarded as a physical exhibit.

14 Counsel for complainant further offers in evidence a copy of the original divisional specification of Christian F. Dilg for Improvement in Ball Bearings, Serial No. 5434, and the same is here spread upon the record, marking as an exhibit being waived.

It is stipulated that said specification was filed in the United States Patent Office February 8, 1900, and that the application of which it forms a part was filed complete February 16, 1900.

Original Divisional Specification.

To all whom it may concern:

Be it known that I, Christian F. Dilg, a citizen of the United States, and a resident of New York in the county and State of New York, certify that I have invented a certain new and useful ball bearing of which the following is a specification the same being a division of my application for ball bearing filed September 18th, 1897, serial number 655,652.

My invention relates to ball holding devices, and particularly to that class of ball bearings wherein a holder is used, having a series of ball bearing points to retain the balls, the latter projecting beyond the device, in the inner and outer, and in the upper directions with respect thereto, and it has for its object the provision of an organization of the class described simple in construction, inexpensive to manufacture, and which operates in a smooth, easy and noiseless manner in practical use.

To obtain the desired end, this, my invention, consists in the construction, arrangement and operation of the parts herein set forth.

In the drawings which accompany and form a part of this specification, figure 1, represents a plan view of a ball holder embodying my invention; figure 2, is a plan, and figure 3, is a front elevation of my ball holding device; figures 4 and 8 are plan views of my bearings, having ball holding devices constructed according to my invention; and figures 5, 6, 7 and 9 are views in detail of my ball holding device.

Like letters of reference indicate like parts in all the views.

I have found it desirable to construct a ball bearing of simple construction, and one that will be reliable and efficient as well as noiseless in practical use, in which the balls are held in their normal position by means of a retaining device, and I have therefore, constructed according to my invention an organization of the kind set forth embodying the preferred construction of parts and their mutual relationship, combination, arrangement and organization in a composite body or structure, as hereinafter described.

Referring particularly to the drawings, A denotes my ball holding device located in the chamber formed by the inner flanges of the hub A^{21} and the cones of the axle A^{22}, consisting ordinarily of a practically horizontal ring having a series of inner and outer bearing points or detents, to retain the balls B; the said bearing points consisting, as in figures 2 and 3, of inner and preferably wider outer and practically vertical side flaps or upwardly extending projections A^3, A', radially opposite each other, and extending upwardly from the ring; either of them also having a preferably tapering extension or top portion or plate A^2, practically parallel with the ring A, and bent over so that it contracts or lies adjacent to its oppositely disposed raised projection. Intermediate each pair of inner and outer flaps or projections, spaces or recesses A^2 are formed. As the functions of the inner and outer projections are to hold the ball from escaping from the ring in an inward or outward direction, it is obvious that as long as the top portion or plate A^2 prevents the ball from moving upwardly, that either the upper or lower portion of said inner or outer projection may be dispensed with, thus reducing the same in size or rather length, and forming either on the inner or outer edge of the ring a series of ridges, which ridges may be made continuous in the form of a rim.

I sometimes construct my ball holding devices in the form of a corrugated ring, as shown in figures 4 to 7. In this instance the edges of the walls of the recesses A^4 formed between the upper portions A^{12} of the ring, are parallel with each other, and the
16 same extend upward above the centre line of the balls B; the
side walls a^2 of the same, in connection with the bottom portion of said ring, constituting the recesses A^4; which walls a^2 are preferably inclined toward the balls in order that the upper portions of each recess will be somewhat smaller than the lower part thereof. My bearing points or detents consist, in this instance, of one or more vertical prongs, as a^3 figure 5, located in the inner and outer portions of the recess A^4; or lateral prongs, as a^4 in figure 6, located along the inner and outer edges of the side inclined portions of my ring A. If preferred, the parts of my ring, forming the lower portions of the recess A^4, may be of circular form, as shown in figure 7, or they may be rectangular, as A^{30}, figures 8 and 9, and to the upper portions A^{15} of my ring, may be secured supplementary plates A^{13}, provided with projecting bearing points or detents a^5.

Inasmuch as the functions of the top portions of my ring *are* primarily to provide holding or bearing points or edges, to hold the balls in proper position, it is obvious that the said top portions, between the said outer bearing points or edges, may be dispensed with or cut away, provided that the ball holding walls are suitably supported, as by being mounted on a ring—which construction is practically that of figure 2, in the event of the spaces between the detents and top portions of the ring were to be filled up in order to form a solid partition—as would necessarily be the case if the said ball holding device shown in figure 2 was constructed of cast metal.

It is manifest that various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not, therefore, wish to be limited to the specific structural details of the organization herein set forth. Obviously the elements of the structure described may be located at an angle to the plane in which they are shown. I, accordingly, use the words "horizontal," "vertical," and the like in a relative sense.

17 In operation, the balls B are placed in the recesses between
each pair of inner and outer bearing points or detents and top bearing points or edges, so that they project beyond the same in the inner and outer and in the upper directions. The balls are thus securely held in place, and by means of the construction shown, are allowed to move quite a long distance radially, and they are thus

enabled to adjust themselves, in case of any wear of the bearing,—the side bearing points or detents, as stated, preventing the balls from rolling out from their sockets.

Obviously, my ball retaining device may be advantageously employed in many kinds of bearings or sockets, and I do not therefore wish to limit myself to the use of my device in connection with ball bearing of the kind shown alone.

As it is evident that many changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but that such changes and equivalents may be substituted therefor, and that

1. The combination, with a hub having inner flanges, and an axle having cones, the said cones and flanges forming chambers, of a ball holding device located in each chamber and consisting of a flat ring having inner upwardly extending projections [flaps] and outer upwardly extending projections [flaps] of a greater width opposite the inner projections [flaps] and being provided with tapering extensions which are so bent that they contact or lie adjacent to the tops of the inner projections [flaps].

2. A ball holding device consisting of a flat ring having inner ∧ upwardly extending projections [flaps] and outer upwardly extending projections [flaps] of a greater width opposite the inner projections [flaps] and being provided with tapering extensions so bent as to contact or lie adjacent to the tops of the inner projections [flaps].

18 3. For a ball holding device, a blank consisting of a flat ring having inner projections [flaps] and outer projections [flaps], the latter being of a greater width than the inner projection [flaps] and being provided with tapering extensions.

4. The combination, with a hub having inner flanges, and an axle having cones, the said cones and flanges forming chambers, of a ball holding device located in each chamber and consisting of a flat ring having a series of ∧ inner and outer projections [flaps] radially opposite each other and extending upwardly from the ring, and balls held in the spaces between the inner and outer projections [flaps] so that they project beyond the ring and side projections [flaps] in the inner and outer and in the upward directions.

5. A ball holding device consisting of a flat ring having [a series of] ∧ inner and outer [flaps] ∧ projections radially opposite each other and extending upwardly from the ring, and balls held in the spaces between the inner

and outer [flaps] projections so that they project beyond the ring and side [flaps] projections in the inner and outer and in the upward directions.

6. A ball holding device consisting of a flat ring having a series of inner and outer [flaps] projections radially opposite each other and extending upwardly from the ring, one or both of each pair of [flaps] projections being provided with extensions to form top portions, and balls held in the spaces between the inner and outer [flaps] projections so that they project beyond the ring and side [flaps] projections in the inner and outer and in the upward directions.

7. A ball holding device consisting of a flat ring having inner upwardly extending [flaps] projections and outer upwardly extending [flaps] projections of a greater width opposite their inner [flaps] projections and being pro-
19 vided with extensions so bent as to contact or lie adjacent to the tops of the inner [flaps] projections.

8. For a ball holding device, a blank consisting of a flat ring having inner [flaps] projections and outer [flaps] projections, the latter being of a greater width than the inner [flaps] projections and being provided with extensions.

9. For a ball holding device, a blank consisting of a flat ring having inner [flaps] projections and outer [flaps] projections, the latter being of a greater width than the inner [flaps] projections, one of said pair of projections being provided with extensions.

In testimony of the foregoing specification I do hereby sign the same in the City of New York, in the County and State of New York this 25th day of January, A. D. 1900.

CHRISTIAN F. DILG.

Witnesses:
CHAS. H. J. DILG.
HERMANN HANSEN.

20 1900.

File Contents.

Application, — papers.

1. Amendment A, M'ch 1, 1900.
2. Mar. 17, 1900, rejection.
3. Proposed amendment, M'ch 27, 1900.
4. Affidavit, April 7, 1900.
5. April 14, 1900, letter.
6. Substitute specification B, April 24, 1900.
7. Print, May 3, 1900.
8. May 9, 1900, rejection.

9. Amendment C, June 8, 1900.
10. June 26, 1900, rejection.
11. Amendment D, July 16, 1900.
12. Proposed amendment, July 17, 1900.
13. Aug. 4, 1900, letter.
14. Amendment F, Aug. 7, 1900.
15. Aug. 27, 1900, rejection.
16. Letter to office, Aug. 29, 1900.
17. Sept. 14, 1900, rejection.
18. Amendment G, Oct. 10, 1900.
19. Oct. 25, 1900, rejection.
20. Amendment H, Jan. 19, 1901.
21. Jan. 26, 1901, rejection.
22. Amendment I, Feb. 23, 1901.
23. March 9, 1901, rejection.
24. Amendment K, M'ch 21, 1901.
25. April 5, 1901, rejection.
26. Amendment L, June 8, 1901.
27. June 26, 1901, rejection.
28. Associate power of attorney, June 29, 1901.
29. Amendment M, Aug. 2, 1901.
30. Sept. 30, 1901, rejection (final).
31. Appeal card, Oct. 10, 1901.
32. Jan. 27, 1902, rejection.
33. Argument, Feb. 12, 1902.
21 34. Feb. 28, 1902, rejection (final).
34½. Appeal (2d) card, May 20, 1902.
35. Interference card, June 3, 1903.
36. Interference letter ——.
37. Interference card, June 3, '03.
38. Interference letter, June 9, '03.
39. Amendment N, Sept. 1, 1903.
40. Sept. 15, 1903, rejection.
41. Amendment O, October 5, 1903.
42. Oct. 27, 1903, rejection.
43. Am'dm't P, Nov. 3, 1903.
44. Nov. 25, 1903, rejection.
45. Appeal (3d) card, Dec. 24, 1903.
46.
Title: Improvement in —.

Counsel for Complainant offers in evidence a full-sized photographic copy of the sheet of drawings filed with the original specification above spread upon the record, and the same is received and marked "Complainant's Exhibit B, Copy of Drawings filed with Original Divisional Specification."

Counsel for Complainant further offers in evidence a clean copy of the amended divisional specification substituted April 24, 1900, as it stood just prior to the amendment of September 1, 1903, and as it stood just subsequent to the amendment of August 2, 1901, and the same is here spread upon the record, marking as an exhibit being mutually waived.

It is mutually agreed that the letters N. N′ in the margin of the exhibit and the carets in the lines correctly indicate tthe location of the subsequent amendments designated by those letters.

My invention relates to ball holding devices, and particularly to that class of ball bearings wherein a retainer is used, having a series
of ball bearing points to retain the balls, the latter project-
22 ing beyond the device, in the inner and outer, and in the
upper directions with respect thereto, and it has for its object the provision of an organization of the class described, simple in construction, inexpensive to manufacture, and which operates in a smooth, easy and noiseless manner in practical use.

To attain the desired end, this, my invention consists in the construction, arrangement and operation of the parts herein set forth.

In the drawings which accompany and form a part of this specification, figure 1, represents a plan view of a ball holder embodying my invention; figure 2, is a plan, and figure 3, is a front elevation of my ball retainer; figures 4 and 8 are plan views of my bearings, having ball holding devices constructed according to my invention; figures 5, 6, 7 and 9 are views in detail of some of my ball holding devices; figure 10 is a longitudinal section of a portion of a hub with one of my ball retaining devices; and figures 11, 12 and 13 are respectiyely views of blanks of which the retaining devices shown in figures 2, 4 and 8 are made.

Like letters of reference indicate like parts in all the views.

I have found it desirable to devise a ball bearing of simple construction, and one that will be reliable and efficient, as well as noiseless in practical use, in which the balls are held in their normal positions by means of a retaining device, and I have, therefore, constructed according to my invention, an organization of the kind set forth, embodying the preferred construction of parts and their mutual relationship, combination, arrangement and organization in a composite body or structure, as hereinafter described.

Referring particularly to the drawings, A denotes my ball holding device located in the chamber formed by the inner flanges of the hub A^2, and the cones of the axle A^{22}, and consisting ordinarily of a base or support, as a practically horizontal ring having a series of inner and outer flaps or retaining portions or projections to con-
fine the balls B; the said retaining portions consisting, as in
23 figures 2 and 3, of inner and preferably wider and outer pro-
jections A^3, A' opposite each other, and extending upwardly from the ring; and also having a preferably tapering extension or top retaining portion A^2, practically parallel with the ring A, and bent over and turned to its oppositely disposed projection to prevent the balls from escaping in an upward direction. Intermediate each pair of inner and outer retaining portions or projections, spaces or recesses A^4 are formed. The functions of the inner and outer and top retaining portions or projections, the extremities of which preferably are in contact, are to hold the balls from escaping from the ring in an upward, inward or outward direction.

I sometimes construct my ball holding devices in the form of a corrugated ring A^{10}, as shown in figures 4 to 6. In this instance the top edges of the walls of each pair of the recesses A^{14} formed between the upper portions A^{12} of the ring, are parallel with each other, as seen in figure 4, and the same lie above the center line of the balls B; the side walls a^2, in connection with the bottom portion of said ring, constituting the recesses A^{14}; which walls a^2 are preferably inclined toward the balls, thus projecting into the ball recesses, in a lateral direction, in order that the upper portions of each recess will be somewhat smaller than the lower parts thereof. My retaining portions or projections consist in this instance of one or more vertical prongs, as a^3, figure 5, located in the inner and outer portions of the recess A^{14}; or lateral prongs, as a^4, in figure 6′ located along the inner and outer edges of the side inclined portions of my ring A. If preferred, the parts of my ring, forming the lower portions of the recesses, may be of circular form, as A^{20} shown in figure 7, or they may be rectangular, as A^{30}, figures 8 and 9, constituting the recesses A^{41}, and to the upper portions A^{12} of my ring, as A^{31}, may be secured, by pins a^{13}, supplementary plates A^{13}, provided with projecting retaining portions, the same being preferably laterally concaved.

It is manifest that various omissions of some particulars could
be made without materially affecting the essential features of
24 my invention or the operation of the remaining parts, and
I do not, therefore, wish to be limited to the specific structural details of the organization set forth herein. Obviously the elements of the structure described may be located at an angle to the plane in which they are shown. I, accordingly, use the words "horizontal," "vertical," and the like in a relative sense.

Insert N.

In operation, the balls B are placed in the recesses between each pair of inner and outer bearing points or projections, (which serve as means at intervals along the ring to separate the balls from each other) and top bearing points, so that they project beyond the same in the inner and outer and in the upper directions. The balls are thus securely held in place, and by means of the construction shown, are allowed to move quite a long distance radially; and they are thus enabled to adjust themselves, in case of any wearing of the bearing taking place;—the bearing points, as stated, preventing the balls from rolling out from their sockets in either a vertical, radial or lateral direction.

Obviously my ball retaining device may be advantageously employed in many kinds of bearings or sockets, and I do not therefore wish to limit myself to the use of my device in connection with ball bearings of the kind shown alone.

I only claim in this application, together with the generic construction of a device of the class described, the specific ball retainer shown in figures 1, 2, 3, 10 and 11; inasmuch as this application is a division of my application filed October 18th, 1897, serial number 655,652.

As it is evident that many changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but that such changes and equivalents may be substituted therefor, and that

25 What I claim as my invention, is:—

1. A ball holding device formed of sheet metal, and having an elastic ring or base portion and provided with ball holding retaining portions and recesses of such size and shape as to allow the balls to be repeatedly sprung in and out of the completed retainer, the elastic ring or base and the ball holding portions being constructed and arranged to resume their normal positions after each operation.

2. A ball holding device formed of sheet metal, and having an elastic ring or base portion and provided with ball holding retaining portions and recesses of such size and shape as to allow the balls to be repeatedly sprung in and out of the completed retainer, the elastic ring or base and the ball holding portions being constructed and arranged to resume their normal positions after each operation, said holder being constructed and arranged to support the balls so that their spherical bearing surfaces project beyond the retainer in the inner and outer and upward directions, and to control the vertical, radial and lateral movements of the said balls, and to prevent the escape of the balls from the holder.

3. In a ball bearing, a ball holding device consisting of a flat ring having a series of inner and a series of outer side flaps radially opposite each other and extending upwardly from the ring, and balls held in the spaces between the inner and outer flaps so that they project beyond the ring and side flaps in the inner and outer and in the upward directions, substantially as set forth.

4. In a ball bearing, a ball retaining device consisting of a flat ring having inner upwardly extending flaps and outer upwardly extending flaps of a larger width opposite the inner flaps and being provided with tapering extensions which are so bent that they come in contact with the tops of the inner flaps, substantially as set forth.

5. The combination of a hub having inner flanges with an axle having cones forming chambers with the said flanges, and in
26 each chamber a ball retaining device consisting of a flat ring
having inner upwardly extending flaps and outer upwardly extending flaps of a larger width opposite the inner flaps and being provided with tapering extensions which are so bent that they come in contact with the tops of the inner flaps, and balls held between the corresponding inner and outer flaps and projecting beyond the top portion of the device and the inner and outer sides of the same, substantially as set forth.

6. For a ball retaining device for ball bearings, a blank consisting of a flat ring having inner flaps and outer flaps, the latter being of a larger width than the inner flaps and being provided with tapering extensions, substantially as set forth.

7. A ball holding device consisting of a ring having inner and outer projections or retaining portions opposed to each other, one of each pair of projections being provided with an extension to form a top portion bent over and turned to the tops of the opposite

retaining portions, and balls held in the spaces between the projections, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

8. A ball holding device consisting of a ring having inner and outer projections or retaining portions of unequal width opposed to each other, one of each pair of projections being provided with a longitudinal extension to form a top portion, and balls held in the spaces between the projections, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

9. A ball holding device formed of sheet metal, and consisting of a ring having inner and outer projections or retaining portions, means to prevent the balls from moving in an upward direction, and balls held in the spaces between the projections or retaining portions, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

27 10. A ball holding device formed of sheet metal, and consisting of a ring having inner and outer projections or retaining portions of unequal width, means to prevent the balls from moving in an upward direction, and balls held in the spaces between the projections or retaining portions, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

11. A ball holding device formed of sheet metal, and consisting of an elastic base or ring constructed and arranged to support the balls so that their spherical bearing surfaces project beyond the retainer in the inner and outer and upward directions, and to allow the balls to be repeatedly sprung in and out of the retainer, the elastic ring or base and the ball retaining portions being constructed and arranged to resume their normal positions after each operation, means integral with the ring to separate the balls from each other, and integral retaining portions or projections constructed and arranged to control the vertical, radial and lateral movements of the said balls, and to prevent the escape of the balls from the holder, the various parts of the said retainer being practically of the same thickness throughout.

12. A ball-holding device for a bearing comprising an imperforate elastic base of ring or annular shape, upon which the balls are adapted to rest, and retaining spurs, lugs or projections extending outward from one face of the base, and arranged to retain the balls between them.

13. A ball-holding device for a bearing comprising an elastic base of ring or annular shape, and retaining elastic spurs, lugs or projections, each separate from the other and all projecting from one side or face of the base.

28 Insert N'.

In testimony of the foregoing specification I do hereby sign the same in the City of New York, in the County and State of New York this 25th day of January A. D., 1900.

CHRISTIAN F. DILG.

Witnesses:
CHAS. H. J. DILG.
HERMANN HANSEN.

Counsel for complainant further offers in evidence a full-sized photographic copy of an additional sheet of drawings filed in connection with said amended specification of April 24, 1900, above spread upon the record, and the same is received and marked "Complainant's Exhibit C, Additional Sheet of Drawings filed with Amended Divisional Specification."

Counsel for complainant further offers in evidence copy of amendment of September 1, 1903, and the same is here spread upon the record, marking as an exhibit being waived. It is agreed that the matter between rules in said amendment was erased by amendment of October 5, 1903, and other matter designated by O and O′ in said latter amendment substituted in place of said matter enclosed between rules and designated N and N′.

29

Division 12, Paper No. 39,
U. S. Patent Office,
Sep. 1, 1903.

Room 324.

CHRISTIAN F. DILG. Ball Bearing. Filed Feb. 16, 1900. Ser. No. 5434.

To the Honorable Commissioner of Patents.

SIR: I amend the above entitled case as follows:

Amendment erased per O. *Insert after line 11, page 4 of the present specification the following:*

N.

* * * Referring to the form of my invention illustrated in Figs. 2 and 3, which for some purposes is the one I prefer, it will be evident that the projections A^3, which co-operate with the other parts of the retainer to hold the balls in place, are of such relation to the top retaining portions A^2 as to prevent the seated balls from falling out of their recesses in a direction toward the said parts A^3. These parts A^3, as is clear from an examination of Fig. 11, constitute a portion of one edge of the base ring, and when they are bent up into position to complete the retainer they constitute a broken or interrupted wall or rib along one edge of the base ring.

In this preferred form of my invention, the ball-retaining device consists of a ring-shaped portion or base constructed with a series of standards rising or springing from one edge in the plane of the axis of the ring and terminating in flaring or sector-shaped flanges, which are arranged substantially at right angles to
30 the standards proper and overlie or extend
transversely of said ring, the latter having parts of its edge, opposite said standards, upturned so that the balls may be sprung into the spaces formed for receiving and confining them between adjacent standards and be held in such spaces by contact with said up-turned edge portions and overlying flanges when the retainer is removed from the ball race or bearing; but the angularly-arranged flanges need not necessarily extend at right angles to the standards proper, nor is it necessary that the latter should extend perpendicular to the base, as it may be practicable in some cases to slightly curve or vary the form of the standards and their flanges (otherwise herein termed "flaps" or "retaining portions or projections" and "tapering extensions" or "top retaining portions or projections," respectively,) and also the form of the ring-shaped portion or base without departing from the spirit of my invention. * * *

Add the *following* claims:

N'.

* * * 14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

Sub. O'.

15. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and
31 having flaring portions arranged at an
angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

17. A ball-holding device formed of sheet-metal, and having a ring or base portion, and provided with ball-retaining portions consisting of flaps or projecting portions rising approximately vertically from the said base and being bent at an angle so as to lie in a plane approximately parallel with the plane of the base so as to allow the balls to be repeatedly sprung in and out of the completed retainer, the said flaps being constructed and arranged to resume their normal positions after each operation, said holder being constructed and arranged to support the balls so that their spherical bearing surfaces project beyond the retainer in the inner and outer and upward directions, and to control the vertical radial and lateral movements of the said balls, and to prevent the escape of the balls from the holder.

Sub. O′. 18. In a sheet-metal ball-holding device, a base or ring, and a series of integral flaps or projections rising approximately vertically from one edge of the said ring and bent at an angle 32 so as to lie in a plane approximately parallel with the plane of the base; the whole being constructed and arranged to retain balls so that they shall project from the bearing in the inner and outer and upward directions, and may be snapped in and out of the same at will. * * *

I request that an interference be declared between this application and patent No. 686,617 to H. B. Keiper November 12, 1901, based upon claims 14, 15 and 16 of the above entitled application, and claims 1, 2 and 3 of said patent; and I further request that this amendment be given immediate consideration in view of this request for an interference.

Respectfully submitted,

C. F. DILG,
By J. S. BARKER,
Asso. Attorney.

Washington, D. C., Sep. 1, [Aug. 31,] 1903.

Counsel for complainant further offers in evidence copy of Office action of September 15, 1903, and the same is here spread upon the record, marking as an exhibit being mutually waived.

G. E. K.

Div. 12, Room 324.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. 40.

All communications respecting this application should give the serial number, date of filing, and title of invention.

33 DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Sept.* —, 1903.

Christian F. Dilg, care J. S. Baker, Washington, D. C.:

Please find below a communication from the examiner in charge of your application, for ball bearing, filed Feb. 16, 1900, Ser. No. 5,434.

F. I. ALLEN,
Commissioner of Patents.

The amendment filed Sept. 1, 1903, has been considered.

The matter inserted after line 11, page 4, is not fully understood because of the omission of reference characters from the new terms incorporated, such as "wall or rib," "standards," "flaring or sector shaped flanges," which appear to have been copied from the Keiper patent 686,617, without the construction to support them. So far as understood, however, this amendatory matter is a sheer departure from anything in Dilg's application as originally filed, and such matter should be canceled.

The allusions to alleged modifications, beginning on page 1, last line, and extending to line 9, page 2, also embody new matter, are unintelligible without illustration, and should be canceled for this reason.

Claims 14, 15, 16, 17, 18, are all rejected because embodying new matter. It is plain from applicant's construction and original specification that he never before Keiper's patent appeared contemplated embodying "a series of standards springing from one edge only," and it is equally plain that he has neither shown nor described standards "provided with sector-shaped or flaring angularly arranged extensions." The thing applicant has would be utterly inoperative and useless with standards "at one edge only," and the new claims are also rejected for this reason.

The request for interference with Keiper's patent 686,617 is refused. "Interferences are things—not words." While Dilg 34 has copied Keiper's words, he has not the same thing, and cannot properly make Keiper's claims. The Keiper patent has been in existence almost two years. Dilg has been in the office with his parent case almost six years, yet he is just now discovering that he has "standards on one edge only" of his alleged base, and that he has "flaring angularly-arranged flanges"—although he shows only taperingly pointed flanges without any "flare" either on the drawing or in his original application.

It is thought proper to state that before passing Keiper's application to issue it was carefully compared with both Dilg applications with a view to interference proceedings. It was then found that none could be properly declared, and it is now believed that conclusion was correct.

The new claims which include "a series of standards springing from one edge only" are also alternative to those claims—as the 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th—which include "inner and outer series of flaps" for retaining the balls.

In any further amendment the claims should be rewritten so as to be presented consecutively.

W. L. AUGHINBAUGH,
Examiner, Division 12.

Counsel for complainant further offers in evidence amendment of October 5, 1903, and the same is here spread upon the record, marking as an exhibit being mutually waived.

35

Division 12, Paper No. 41,
Oct. 5, 1903,
U. S. Patent Office.

Room 324.

CHRISTIAN F. DILG. Ball Bearings. Filed Feb. 16, 1900. Ser. No. 5434.

To the honorable Commissioner of Patents.

SIR: I amend this case as follows:

Cancel the *amendment, designated N, presented September 1, 1903,* and *substitute:*

O.

* * * Referring to the form of my invention illustrated in Figs. 2 and 3, which for some purposes is the one I prefer, it will be evident that the projections A^3, which cooperate with the other parts of the retainer to hold the balls in place, are of such relations to the top retaining portions A^2 as to prevent the seated balls from falling out of their recesses in a direction toward the said parts A^3. These parts A^3, as is clear from an examination of Fig. 11, are integral with the base ring, being attached to one edge thereof and when they are bent up into position to complete the retainer they constitute a broken or interrupted low wall or rib, along one edge of the base ring.

In this preferred form of my invention, the ball-retaining device consists of a ring-shaped portion or base A constructed with a series of ball-retaining portions A' (otherwise herein termed standards) rising or springing from one edge of the base and terminating in tapering extensions or top-retaining projections A^2 (otherwise herein termed sector-shaped or flaring flanges or extensions), which are arranged at an angle to the parts A' and overlie the base. From the edge of the ring or base A opposite the ball-retaining parts A'
36 extend the up-turned ball-retaining parts of the retainer designated A^3 and which as already stated constitute a broken wall or rib along the edge of the ring. This construction permits the balls to be sprung into the spaces or recesses A^4 formed for receiving and confining them between the adjacent retaining parts A', A^2, A^3, being retained in such recesses by contact with the up-turned portions A^3 at the edge of the ring and the overlying portions A^2, when the retainer is removed from the ball race or bearing. * * *

Cancel the *claims* and *substitute:*

O′.

1. A ball holding device formed of sheet metal, and having an elastic ring or base portion and provided with ball holding retaining portions and recesses of such size and shape as to allow the balls to be repeatedly sprung in and out of the completed retainer, the elastic ring or base and the ball holding portion being constructed and arranged to resume their normal positions after each operation.

2. A ball holding device formed of sheet metal, and having an elastic ring or base portion and provided with ball holding retaining portions and recesses of such size and shape as to allow the balls to be repeatedly sprung in and out of the complete retainer, the elastic ring or base and the ball holding portions being constructed and arranged to resume their normal positions after each operation, said holder being constructed and arranged to support the balls so that their spherical bearing surfaces project beyond the retainer in the inner and outer and upward directions, and to control the vertical, radial and lateral movements of the said balls, and to prevent the escape of the balls from the holder.

3. In a ball bearing, a ball holding device consisting of a flat ring having a series of inner and a series of outer
37 side flaps radially opposite each other and extending upwardly from the ring, and balls held in the spaces between the inner and outer flaps so that they project beyond the ring and side flaps in the inner and outer and in the upward directions, substantially as set forth.

4. In a ball bearing, a ball retaining device consisting of a flat ring having inner upwardly extending flaps and outer upwardly extending flaps of a larger width opposite the inner flaps and being provided with tapering extensions which are

so bent that they come in contact with the tops of the inner flaps, substantially as set forth.

5. The combination of a hub having inner flanges with an axle having cones forming chambers with the said flanges, and in each chamber a ball retaining device consisting of a flat ring having inner upwardly extending flaps and outer upwardly extending flaps of a larger width opposite the inner flaps and being provided with tapering extensions which are so bent that they come in contact with the tops of the inner flaps, and balls held between the corresponding inner and outer flaps and projecting beyond the top portion of the device and the inner and outer sides of the same, substantially as set forth.

6. For a ball retaining device for ball bearings, a blank consisting of a flat ring having inner flaps and outer flaps, the latter being of a larger width than the inner flaps and being provided with tapering extensions, substantially as set forth.

7. A ball holding device consisting of a ring having inner and outer projections or retaining portions opposed to each other, one of each pair of projections being provided with an extension to form a top portion bent over and turned to the tops of the opposite retaining portions and balls held in the spaces between the projections, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

38 8. A ball holding device consisting of a ring having inner and outer projections or retaining portions of unequal width opposed to each other, one of each pair of projections being provided with a longitudinal extension to form a top portion, and balls held in the spaces between the projections, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

9. A ball holding device formed of sheet metal, and consisting of a ring having inner and outer projections of retaining portions, means to prevent the balls from moving in an upward direction, and balls held in the spaces between the projections or retaining portions, so that they can turn in any direction and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

10. A ball holding device formed of sheet metal, and consisting of a ring having inner and outer projections or retaining portions of unequal width, means to prevent the balls from moving in an upward direction, and balls held in the spaces between the projections or retaining portions so that they can turn in any direction, and their spherical bearing surfaces project beyond the device in the inner and outer and in the upper directions.

11. A ball holding device formed of sheet metal, and consisting of an elastic base or ring constructed and arranged to support the balls so that their spherical bearing surfaces project beyond the retainer in the inner and outer and upward directions, and to allow the balls to be repeatedly sprung in and out of the retainer, the elastic ring or base and the ball retaining portions being constructed and arranged to resume their normal positions after each operation, means integral with the ring to separate the balls from each other, and integral retaining portions or projections constructed
39 and arranged to control the vertical, radial and lateral
movements of the said balls, and to prevent the escape of the balls from the holder, the various parts of the said retainer being practically of the same thickness throughout.

12. A ball holding device for a bearing comprising an imperforate elastic base of ring or annular shape, upon which the balls are adapted to rest, and retaining spurs, lugs or projections extending outward from one face of the base and arranged to retain the balls between them.

13. A ball holding device for a bearing comprising an elastic base of ring or annular shape, and retaining elastic spurs, lugs or projections, each separate from the other and all projecting from one side or face of the base.

14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

15. A ball retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

17. A ball-holding device formed of sheet-metal, and having a base portion, and provided with ball-retaining portions A′ rising approximately vertically from the said base
40 and being at an angle so as to lie in a plane approxi-
mately parallel with the plane of the base so as to allow the balls to be repeatedly sprung in and out of the completed retainer, the said portions A′ being constructed and ar-
P′ ranged to resume their normal positions after each operation, said ball-holding device [holder] being constructed and arranged to support the balls so that their spherical bearing surfaces pro-

ject beyond the retainer in the inner and outer and upward directions, and to control the vertical, radial and lateral movements of the said balls, and to prevent the escape of the balls from the holder.

18. In a sheet-metal ball-holding device, a base, a series of integral projections rising approximately vertically from one edge of the said ring and bent at an angle so as to lie in in a plane approximately parallel with the plane of the base, P′. and [relatively low] ball-retaining means arranged along the edge of the base opposite the aforesaid projections; the whole being constructed and arranged to retain balls so that they shall project from the bearing in the inner and outer and upward directions, and may be snapped in and out of the same at will—

The office letter of September 15, has been carefully considered. The matter inserted after line 11, page 4, has been re-written and the reference characters employed on the drawings have been freely incorporated therein so as to render the meaning of the inserted matter perfectly clear. It will be understood by the examiner that any uncertainty which may arise from the use of new terms in this case is one which is necessarily incident to the present practice of the office requiring claims that are put into interference to be identical in terms and also requiring the terms employed in interfering claims to appear in the specification.

The entire set of claims has been re-written as requested. The allegation of the examiner that claims 14, 15, 16, 17 and 18 embody new matter is denied by applicant. Not an element appears 41 in any one of these claims that has not been described and illustrated from the moment the case was filed. Keiper in his patent employs the words "standards" as the term designating the parts that carry the top-retaining portions of the holder, while applicant has employed the words "projections" or "retaining portions" to designate the parts of his device (A′) corresponding with the "standards" of Keiper. The parts A′ are along and spring from one edge only in Fig. 1 of applicant's construction. These parts A′, whether they be designated projections or retaining portions or standards carry parts designated A^2, which applicant has elected to term tapering extensions or top retaining portions or projections. Keiper in his specification elects to term the similar parts of his device, designated by him as *a*, sector-shaped or flaring angularly-arranged extensions. Applicant's apparatus is no more inoperative and useless with the parts A′ "at one edge only" than is Keiper's with his parts *a*′ "at one edge only."

It is not understood how the examiner can state that applicant has only now discovered that he has standards, (the term applied to the parts A′) on one edge only of the base as this was shown when the application was filed. Nor can he understand how the examiner can hold that he has only now discovered that he has "flaring angularly-shaped flanges," a term applied to his parts A^2, as these parts have been shown and described from the beginning.

These parts certainly flare, because they are wider at one end than at the other. One definition of the word "flare" is—to open or spread outward. It is in this sense that Keiper employs the term and in the same sense that applicant now uses it. The parts are angularly-arranged relative to the standards or extensions A′ that carry them.

With this understanding of applicant's claims, 14 to 18 inclusive, it must be clear that they are not alternative to the other claims which include the inner and outer series of flaps for retaining the balls, and therefore it is requested that this objection to these claims be withdrawn. The earlier claims referred to were more specific in certain features than those lately presented.

42 The examiner calls attention to the fact that the Keiper patent has been issued nearly two years. However, he does not call attention to the fact that at the time the Keiper patent was issued this application was on appeal, that such appeal was not finally decided until May, 1903, when the Commissioner overruled the examiner and held that applicant was right in making the claims he was contending for in 1901, before the Keiper patent was issued; that immediately after the Commissioner's decision, this case was put into interference, which interference was determined September 2, 1903, favorably to applicant; and that the amendment presenting these new claims was filed immediately upon applicant's learning of the favorable decision of the examiner, not a day even of delay elapsing. If this is not diligence on applicant's part in seeking to protect his rights, he fails to understand what diligence is.

Request for the declaration of an interference with claims 1, 2 and 3 of the Keiper patent is repeated.

Respectfully submitted,

CHRISTIAN F. DILG,
By J. S. BARKER,
Associate Attorney.

October 5, 1903.

Counsel for complainant further offers in evidence Office action of October 27, 1903, and the same is here spread upon the record, marking as an exhibit being mutually waived.

43 R. A. C.

Div. 12, Room 324.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. 42.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *October* 27, 1903.

Christian F. Dilg, care J. S. Barker, Washington, D. C.:

Please find below a communication from the examiner in charge of your application, for ball bearing, filed Feb. 16, 1900, S. No. 5,434.

F. I. ALLEN,
Commissioner of Patents.

This application as amended October 5, 1903, has been considered.

Claims 14, 15, 16 are rejected because unwarranted by drawing or description. They are also rejected as involving new matter, for the reasons before stated.

In claim 17, lines 8 and 9, "said holder" is without antecedent in this claim. Beginning with "being constructed," line 8, the claim is a mere statement of function. As the only "ball-retaining portions" included in the claim are the part A′, the claim is incomplete and inoperative, and is therefore rejected.

In claim 18, line 5, "relatively low ball-retaining means" is without warrant in the description or drawing, and this claim is therefore rejected. The claim is also rejected as that feature involves new matter.

Claims 1 to 13 are allowable.

44. The rejection of claims 14 to 18 may be considered final, if desired.

Refusal to declare an interference between this application and Keiper's patent 686,617 is repeated, for the reasons previously given.

W. L. AUGHINBAUGH,
Examiner, Division 12.

Counsel for complainant further offers in evidence copy of amendment of November 3, 1903, and the same is here spread upon the record, marking as an amendment being mutually waived.

Division 12, Paper No. 43,
Nov. 3, 1903,
U. S. Patent Office.

Room 324.

CHRISTIAN F. DILG. Ball Bearing. Filed Feb. 16, 1900. Serial No. 5434.

To the Honorable Commissioner of Patents.

SIR: I amend the above entitled case as follows:

Claim 17, line 8 after "operation," insert

P. —and provided also with other ball-retaining means cooperating with the portions A′ to separate the balls and retain them in place—.

P'. Line 9, cancel *"holder" and substitute—ball-holding device—.*

Claim 18, line 5, cancel "relatively low."

These amendments are submitted in order to cure certain formal objections and to put the claims in condition for appeal.

Respectfully submitted,

CHRISTIAN F. DILG,
By J. S. BARKER,
Associate Attorney.

November 3, 1903.

Counsel for complainant further offers in evidence copy of the Office action of November 25, 1903, and the same is here spread upon the record, marking as an exhibit being mutually waived.

45 E. S.

Div. 12, Room 324.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. 44.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *November* 25, 1903.

Christian F. Dilg, c/o J. S. Barker, Washington, D. C.:

Please find below a communication from the examiner in charge of your application, for ball bearing, filed Feb. 16, 1900, serial No. 5434.

F. I. ALLEN,
Commissioner of Patents.

This application as amended Nov. 3, 1903, has been considered. Claims 14, 15, 16 and 18 are finally rejected for the reasons before given.

As now advised the other claims may be allowed.

GEO. L. BEELER,
Acting Examiner, Division 12.

A.

Counsel for complainant further offers in evidence notice and reasons of appeal to the Board of Examiners in Chief, said appeal being the third taken during the prosecution of the case, and the same is here spread upon the record, marking as an exhibit being mutually waived.

46 Appeal No. 25475, Paper No. 14.

Notice and Reasons of Appeal.

Mail Room,
Dec. 24, 1903,
U. S. Patent Office.

Dec. 26, 1903,
U. S. Patent Office,
Docket Clerk.

3d Appeal.

CHRISTIAN F. DILG. Ball Bearing. Filed Feb. 16, 1900. Serial No. 5434.

To the Honorable Commissioner of Patents.

SIR: We hereby appeal to the board of examiners-in-chief from the decision of the primary examiner rendered October 27, 1903, when he a second time and finally rejected claims 14, 15, 16, 17 and 18 of the above entitled application. The reasons for taking this appeal are—

1. The examiner erred in holding that the 14th, 15th and 16th claims are unwarranted by the drawings.
2. The examiner erred in holding that the last mentioned claims involve new matter and in rejecting them for that reason.
3. The examiner erred in holding that the 17th and 18th claims embodied new matter and in rejecting the claims for that reason.

This application has before been before the board on appeal, for which reason it is presumed no appeal fee will — required.

We desire that a day of hearing be set that *I* may be heard in support of this appeal.

Very respectfully,
J. O. FOWLER, JR.,
J. S. BARKER,
Attorneys for Christian F. Dilg.

47 Counsel for complainant further offers in evidence statement of the Examiner on appeal before the Board of Examiners in Chief filed January 4, 1904, and the same is here spread upon the record, marking as an exhibit being mutually waived.

Appeal No. 25475, Paper No. 15.

Copy sent attorney. R. A. C.

Examiner's Statement.

3d Appeal.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Jan.* 4, 1904.

In re C. F. DILG for Ball Bearing. Filed Feb. 18, 1900. S. No. 5434.

Appealed to Board of Examiners-in-Chief.

Primary Examiner's Statement.

Mr. J. O. Fowler, Jr., for applicant; Mr. J. S. Barker, associate.

This is the third appeal to the board on this application.

The claims now appealed are:

14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

15. A ball-retainer consisting of an annular base portion and a
series of integral parts extending from one edge only of said
48 base and having flaring portions arranged at an angle thereto,
whereby suitable spaces are formed for receiving balls which
are sprung into said spaces and confined between said parts.

16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

18. In a sheet-metal ball-holding device, a base, a series of integral projections rising approximately vertically from one edge of the said ring and bent at an angle so as to lie in a plane approximately parallel with the plane of the base, and ball-retaining means arranged along the edge of the base opposite the aforesaid projections; the whole being constructed and arranged to retain balls so that they shall project from the bearing in the inner and outer and upward directions, and may be snapped in and out of the same at will.

While the official action of Nov. 25, 1903, finally rejected claims 14, 15, 16 only, claim 18 should have been included. Applicant has appealed claims 14, 15, 16, 17, 18. But claim 17 is believed allowable. This statement will therefore refer only to claims 14, 15, 16, 18 above given.

The ground of rejection is that claims 14, 15, 16, 18 are unwarranted by drawing or description, and therefore that they embody new matter.

Claims 14, 15, 16 are copied word-for-word from patent 686,617, Keiper, Nov. 12, 1901, (Thrust bearings, ball). Dilg requested that an interference be declared between his application and said Keiper patent on these three claims, and in a divisional application has unwarrantably copied another of Keiper's claims accompanied by a similar request.

It is plain from applicant's construction and his original specification that he never before Keiper's patent appeared contemplated
having "a series of standards springing from *one edge only;*" and it
is equally plain that he has neither shown nor described
49 standards "provided with sector-shaped angularly-arranged
extensions." The thing applicant has would be utterly in-operative and useless with standards "at one edge only."

That applicant never contemplated using standards "at one edge only" is proven by the fact that before Keiper's patent appeared he had made his present claims 3, 4, 5, 6, 7, 8, 9, 10, 11, each of which include as elements *two series of projections* for retaining the balls in position. These latter claims and the appealed claims are clearly alternative to each other, and could not be properly allowed in one application even if they were warranted.

The objection of alternativeness to these claims was made in the official action of Sept. 15, 1903; but was not urged for the reason that the questions of new matter and of the propriety of declaring an interference are also involved in the question of alternativeness, and therefore all depend upon your honor's decision.

The specification does not now contain descriptive matter as a basis for the new matter in the rejected claims. An amendment was filed Sept. 1, 1903, by applicant, which amendment copied a number of Keiper's terms which had no foundation in Dilg's case. On Sept. 15, 1903, an official action was made criticising such unauthorized terms both in the specification and in the claims. Applicant then filed the amendment of Oct. 5, 1903, in which the descriptive matter is not so objectionable, but which amendment contains the Keiper claims, as quoted above.

Attention is asked to the facts that Dilg has detained the parent case (this is a divisional application) in the office more than six years. Keiper's patent has been in existence over two years. Dilg, has, as already intimated, discovered since Keiper's patent issued that he (Dilg) has "standards on *one edge only*," and yet he has been claiming the "standards" *on both edges for years.*

On page 4 of the Dilg specification, in the last paragraph, it will be seen that applicant states that "I only claim in this application, together with the generic construction, the specific ball retainer shown in Figs. 1, 2, 3, 10, 11." The finally rejected claims are all specific ones. If your honors will read these claims in Keiper's construction, every feature will be found exactly as the claims call for them. Now, try to read those same claims on Dilg. In Figs. 1, 2, 3, 10, 11, "standards springing from one edge only" cannot be found, because in each figure the so-called "standards" spring from each edge of the base. In fact, Dilg never knew he had any "standards" until he saw Keiper's patent. Before that time he had two sets of "projections" A' and A^3, which he called "inner and outer projections." Now find in Dilg the standards "provided with sector-shaped or flaring angularly-arranged extensions," which are the parts *a* of Keiper. In Dilg the part A^2 is *tapering* instead of *flaring*, and he neither shows nor describes such a construction. He certainly, as already stated, never pretended he had such "angularly flaring extensions" until he saw Keiper's patent.

Before passing Keiper's application to issue it was carefully compared with both Dilg applications with a view to interference proceedings. It was then found that none could be properly declared, and it is now believed that conclusion was correct.

The appealed claims are believed to have been properly rejected for the reasons herein given.

W. L. AUGHINBAUGH,
Examiner, Division 12.

Counsel for complainant further offers in evidence decision of the Board of Examiners in Chief dated January 19, 1904, and the same is here spread upon the record, marking as an exhibit being mutually waived.

51 Appeal 25475, Paper No. 18.

Decision.

Recorded, Vol. 75, p. 66.

E. C. C.

No. 25475. U. S. Patent Office, *Jan.* 19, 1904.

Before the Examiners-in-chief, on Appeal.

Application of Christian F. Dilg for a Patent for an Improvement in Ball Bearings. Filed February 16, 1900. Serial No. 5,434.

Third Appeal.

Messrs. J. Odell Fowler and J. S. Barker for appellant.

The claims appealed are:

14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

15. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

52 18. In a sheet metal ball-holding device, a base, a series of integral projections rising approximately vertically from one edge of the said ring and bent at an angle so as to lie in a plane approximately parallel with the plane of the base, and ball-retaining means arranged along the edge of the base opposite the aforesaid projections; the whole being constructed and arranged to retain balls so that they shall project from the bearing in the inner and outer and upward directions, and may be snapped in and out of the same at will.

The appeal in this case includes not only the claims above quoted, but also claim 17, which, as appears from the examiner's action of November 25, 1903, has been allowed. Said claim is therefore not before us for consideration.

The examiner's ground of rejection is that claims 14, 15, 16 and 18 are "unwarranted by drawing or description and therefore that they embody new matter."

It appears that claims 14, 15 and 16 are claims of a patent to one Keiper, No. 686,617, November 22, 1901, and that these claims were copied from the Keiper patent for the purpose of securing an interference between that patent and the present application.

The question before this tribunal is not whether the desired interference shall be declared, but is purely and simply whether Dilg, the present applicant, has a right to these claims; or, in other words, whether the language employed in said claims is applicable to the construction that is disclosed in the specification and drawing of the application.

Claim 14 includes a ball-retaining device for ball bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

Appellant's revealed construction (Fig. 2 of his drawing) includes a ring-shaped portion or base having a series of standards springing from one edge thereof and provided with tapering angular arranged extensions. It also includes projections A^3 which originate
53 at the inner edge of the base, the ball pockets being the
spaces or cavities formed by the ring-shaped portion or base, the tapering angularly arranged extensions and the said projections A^3. Said construction does not include a series of standards which are provided with angularly arranged extensions that are sector-shaped or flaring, for its tapering extensions are not of this form.

Furthermore, appellant does not disclose a construction in which a ring-shaped portion or base and a series of standards and angularly arranged extensions form spaces for receiving and *confining* balls between adjacent standards. As already indicated, the ball receiving and *confining* spaces or pockets of appellant's construction are formed not only by these parts, but by the projections A^3 which extend from the inner edge of the base. There is no suggestion anywhere in appellant's specification that these projections A^3 may be dispensed with, or that the ball receiving and confining pockets are complete without them. As a matter of fact the ball receiving spaces which lie beneath the tapering extensions would, if these projections A^3 were eliminated from the construction, cease to be ball confining spaces.

Although, as already intimated, the question of Dilg's right to make the claim now under consideration stands entirely apart from the question as to whether there is any interference in fact between Dilg's application and the patent to Keiper, it is interesting to know that Keiper's angularly arranged extensions are flaring extensions which because of their peculiar shape co-operate in such a manner with the ring-shaped portion or base and the series of standards from which they spring as to retain the balls in their pockets.

The language of the claim is perfectly clear when applied to Keiper's construction, but when an attempt is made to read it upon Dilg's construction it is at once seen that only by an extremely forced interpretation can it be made to apply thereto, and that even then it excludes the projections A^3 which are an essential part of Dilg's mechanism.

What we have said concerning claim 14 applies with equal force to claims 15 and 16.

54 In regard to claim 18 we are unable to discover any reason for holding that the language employed therein is inapplicable to the construction which Dilg shows and describes in his application.

The decision of the examiner is affirmed as to all of the claims except claim 18, and as to this claim it is reversed.

T. G. STEWARD,
S. W. STOCKING,
J. H. BRICKENSTEIN,
Examiners-in-Chief.

Counsel for complainant further offers in evidence notice and reasons of appeal to the Commissioner of Patents dated February 11, 1904, and the same is here spread upon the record, marking as an exhibit being mutually waived.

Notice and Reasons of Appeal.

In the United States Patent Office.

CHRISTIAN F. DILG. Ball Bearing. Filed Feb. 16, 1900. Ser. No. 5434.

Appeal to the Commissioner of Patents in Person.

Now comes Christian F. Dilg, the above-named applicant, and appeals to your honor in person from the decision of the board of examiners-in-chief rendered January 19, 1904, wherein they affirmed the primary examiner and rejected claims 14, 15 and 16 of the above designated application. The grounds for taking this appeal are:

1. The examiners-in-chief erred in deciding that the said claims 14, 15 and 16 are "unwarranted by drawing or description and therefore they embody new matter" and in such holding affirming the decision of the primary examiner;

55 2. The examiners-in-chief erred in deciding that the said claims as they stand are each for an inoperative device, in that they each "exclude the projections A^3 which are an essential part of Dilg's mechanism;"

3. The examiners-in-chief erred in affirming the decision of the primary examiner as to claims 14, 15 and 16.

4. The examiners-in-chief erred in not reversing the decision of the primary examiner as to these claims and finding that they were each for a new and useful improvement warranted by the drawings and specification of this application.

We desire to be heard by your honor in support of this appeal and therefore request that a day of hearing be set in order that we may appear.

$20.00 the appeal fee is handed you herewith.

Very respectfully,

J. O. FOWLER, Jr.,
J. S. BARKER,
Attorneys for Christian F. Dilg.

Feb. 11, '04.

Counsel for complainant further offers in evidence copy of the decision of the Commissioner of Patents dated April 4, 1904, and the same is here spread upon the record, marking as an exhibit being mutually waived.

56 Serial No. 5434, Paper No. 3.

Comm'r's Decision.

Recorded, Vol. 79, Page 324.

Feb. 24, 1904. S. E. T.

United States Patent Office.

Ex Parte Christian F. Dilg. Ball Bearing.

Appeal from Examiners-in-Chief.

Application filed February 16, 1900, No. 5434.

Mr. J. Odell Fowler and Mr. J. S. Barker for appellant.

This is an appeal from the decision of the examiners-in-chief affirming the decision of the primary examiner in the rejection of the following claims "as being unwarranted by drawing or description and therefore that they embody new matter."

"14. A ball-retaining device for ball bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

"15. A ball retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

"16. A ball retaining device for ball bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

57 These claims are copies of claims in a patent g-anted to Keiper, No. 686,617, November 12, 1901, and were confessedly introduced in this case for the purpose of obtaining an interference with this patent.

Although the question to be determined is not one of interference in fact between these parties, still to determine clearly the meaning of these claims and whether they are warranted by Dilg's original disclosure, it will throw light upon the question to be determined to consider their meaning when referring to the construction shown by Keiper, from whose patent they have been copied.

Both Keiper and Dilg seek to improve ball retainers or spacers within which balls of a ball bearing are mounted, and which prevent the balls from coming in contact with each other. In both constructions there is a body portion or ring having a series of standards and provided with angularly arranged extensions to form suitable spaces for receiving and confining the balls.

The difference between the two constructions and the reason why Dilg's disclosure does not form a foundation upon which to make these claims appealed, is clearly set forth by the examiners-in-chief in their decision. The claims expressly call for a construction. where the ring-shaped portion or base has a series of standards "springing from one edge thereof *only*." Dilg's drawing shows two series of standards, each series springing from opposite edges of the ring. His disclosure does not warrant a construction having a "ring-shaped portion or base having a series of standards springing from one edge thereof *only*." Another positive requirement of these claims is that the angularly arranged extension of the standards be "sector shaped or flaring." Keiper shows such a construction wherein this peculiar arrangement of the ends of the standards performs a very useful function in the combination set forth in his claims. When attempt is made, however, to read these claims upon the construction shown and described by Dilg, it is found that instead of having the ends of his standards "sector-shaped or flaring," they are pointed or tapered.

58 The decision of the examiners-in-chief therefore in holding that the appellant's application contains no warrant for the allowance of thes claims is affirmed.

F. I. ALLEN,
Commissioner.

April 4, 1904.

Counsel for complainant further offers in evidence copy of notice and reasons of appeal to the Court of Appeals of the District of Columbia dated May 17, 1904, and the same is here spread upon the record, marking as an exhibit being mutually waived.

Mail Room,
May 17, 1904,
U. S. Patent Office.

Notice of Appeal.

In the United States Patent Office.

In re Application of CHRISTIAN F. DILG. Improvements in Ball Bearings. Filed Feb. 16, 1900. Serial No. 5434.

To the Commissioner of Patents.

SIR: You are hereby notified of my appeal to the Court of Appeals of the District of Columbia from your decision, rendered on or about April 4, 1904, rejecting claims 14, 15, 16 of the above-entitled application and refusing me a patent for the invention set forth therein.

The following are assigned as reasons of appeal:

1. The Commissioner of Patents erred in deciding that the disclosure in the application "does not warrant a construction having a "ring-shaped portion or base having a series of standards springing from one edge thereon *only*," which construction is called for by the claims on appeal.

2. The Commissioner of Patents erred in holding, with respect to that element of the claims designated "sector-shaped or flaring
59 angularly arranged extensions" (claim 1) that "instead of having the ends of his standards 'sector-shaped' or 'flaring,' they are pointed or tapering."

3. The Commissioner of Patent- erred in holding that appellant's application contains no warrant for each and all of the claims on appeal.

4. The Commissioner of Patents erred in misinterpreting the means of the phrase "springing from one edge only," appearing in the claims as applied to the "standards," as such phrase is used and intended to be used by this appellant.

5. The Commissioner of Patents erred in not considering the entire clause—"a series of standards springing from one edge only and provided with sector-shaped or flaring angularly arranged extensions"—(and the corresponding clauses of the other claims), but instead divided it, and treated it as being a statement of two independent features of construction.

6. The Commissioner of Patents erred in rejecting the claims on appeal as being for subject-matter unwarranted by the disclosure in the application.

7. The Commissioner of Patents erred in not overruling the decision of the board of examiners-in-chief and allowing the claims on appeal.

Very respectfully,

J. O. FOWLER, JR.,
J. S. BARKER,
Attorneys for Christian F. Dilg.

[Endorsed:] Docket clerk, U. S. Patent Office, May 17, 1904.

Counsel for complainant further offers in evidence a copy of petition of appeal to the Court of Appeals of the District of Columbia, and the same is here spread upon the record, marking as an exhibit being mutually waived.

In the Matter of the Application of CHRISTIAN F. DILG. No. 272.

60 *Petition of Appeal.*

In the Court of Appeals of the District of Columbia.

In the Matter of the Application of CHRISTIAN F. DILG for Improvements in Ball Bearings. Filed February 16, 1900. Serial Number 5434. Patent Appeal Docket, No. 272.

To the Court of Appeals of the District of Columbia:

Your petitioner, Christian F. Dilg, a citizen of the United States and resident of New York City and State of New York, respectfully represents:

That he is the original, first and sole inventor of certain new and useful improvements in ball bearings.

That on the 16th day of February, 1900, in the manner prescribed by law, he presented his application to the Patent Office praying that a patent be issued to him for the said invention, such application being a division of an application before filed by him, to wit, on the 18th day of October, 1897, for improvements in ball bearings, and bearing serial number 655,652.

That due proceedings were had in the Patent Office upon the said application, and that on the 4th day of April, 1904, certain claims of said application were rejected and a patent for the said invention was refused him.

That on the 17th day of April, 1904, your petitioner, pursuant to Sections 4912 and 4913, Revised Statutes of the United States gave notice to the Commissioner of Patents of his appeal to this honorable court from his refusal to issue a patent to him for said invention upon said application as aforesaid, and filed with him, in writing, the following reasons of appeal:

"1. The Commissioner of Patents erred in deciding that the disclosure in the application 'does not warrant a construction having a "ring-shaped portion or base having a series of standards springing from one edge thereof *only*," ' which construction is called for by the claims on appeal.

61 "2. The Commissioner of Patents erred in holding, with respect to that element of the claims designated 'sector-shaped or flaring angularly arranged extensions' (claim 1) that 'instead of having the ends of his standards "sector-shaped or flaring," they are pointed or tapering.'

"3. The Commissioner of Patents erred in holding that appellant's application contains no warrant for each and all of the claims on appeal.

"4. The Commissioner of Patents erred in misinterpreting the meaning of the phrase 'springing from one edge only,' appearing in the claims as applied to the 'standards,' as such phase is used and intended to be used by this appellant.

"5. The Commissioner of Patents erred in not considering the entire clause—'a series of standards springing from one edge only and provided with sector-shaped or flaring angularly arranged extensions'—(and the corresponding clauses of the other claims), but instead divided it and treated it as being a statement of two independent features of construction.

"6. The Commissioner of Patents errer in rejecting the claim on appeal as being for subject-matter unwarranted by the disclosure in the application.

"7. The Commissioner of Patents erred in not over-ruling the decision of the board of examiners-in-chief and allowing the claims on appeal."

That the Commissioner of Patents has furnished him a certified transcript of such parts of the record and proceedings in the Patent Office relating to said application for patent as are pertinent and material to the questions raised by this appeal, in accordance with a stipulation entered into by and between the attorneys for this appellant and John M. Coit for the Commissioner of Patents, which transcript is filed herewith and is to be deemed and taken as a part hereof.

62 Wherefore your petitioner prays that his said appeal may be heard upon and for the reasons assigned therefor to the Commissioner as aforesaid, and that said appeal may be determined and the decision of the Commissioner be revised and reversed, that justice may be done in the premises.

CHRISTIAN F. DILG,
By J. O. FOWLER, Jr.,
J. S. BARKER,
His Attorneys.

J. S. BARKER,
Solicitor and of Counsel.

Counsel for complainant further offers in evidence a copy of the decision of the Court of Appeals dated February 7, 1905, in so far as it relates to the appeal just spread upon the record, and the same is here spread upon the record, marking as an exhibit being mutually waived.

Court of Appeals of the District of Columbia.

In re Dilg.

Decided February 7, 1905.

Mr. J. S. Barker for the Appellant.
Mr. John M. Coit for the Commissioner of Patents.

Duell, *J.:*

Opinion on Appeal re Application, Serial No. 655,652.

* * * * * * *

The claims appealed in No. 272, which appeal relates to the divisional application Serial No. 5,434, are as follows:.

14. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

63 15. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards spring axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

The ground of rejection of these claims is, as before stated, that they are unwarranted by the drawing or description as originally filed and consequently embody new matter.

Has appellant the right to make these claims, or as asserted in the Patent Office, is he debarred from making the claims because the various elements are neither shown nor described in the application as filed? After an examination of the record, our conclusion is that he has no right to make these claims in the present application.

The original application disclosed "standards" springing from both edges of an annular base, and we fail to find the slightest intimation that appellant contemplated the omission of either series of standards. The construction disclosed required the employment of both series of standards in order to retain the balls. All the claims in controversy have as an element a series of standards or integral parts extending from one edge of the annular base portion *only.* This is such a radical departure from the invention as originally shown and described that it is clearly unwarranted and, standing by itself, would have been sufficient ground for the adverse action of the Office. There is, however, another fatal departure from the original disclosure. In the amendment of October 5, 1903, the appellant injects into the specification a statement, in substance, that these standards have extensions or top pieces which are 64 "sector-shaped or flaring." He originally disclosed only straight-sided extensions, and the change is clearly not warranted by anything found in the drawing.

For the reason that appellant's device, as filed, failed to disclose the "sector-shaped" top pieces and standards on one side *only* of the ring-shaped base, he is not justified in amending his specification in the respect stated, nor in presenting the claims in controversy.

The decisions of the Commissioner of Patents in both appeals are correct and we must affirm them.

The opinion and the proceedings in the two causes in this court will be certified to the Commissioner for record in his office, according to law.

Counsel for complainant offers in evidence a copy of brief for the Commissioner of Patents filed in the Court of Appeals, District of Columbia, January 7, 1905, *in re* Christian F. Dilg, Patent Appeal No. 272, October Term, 1904, and the same is received and marked "Complainant's Exhibit M, Brief for Commissioner of Patents before Court of Appeals." It is agreed that Exhibit M be regarded as a physical exhibit.

It is mutually stipulated between counsel for the respective parties that the copies of documents above offered in evidence, including the photographic copies of drawings, may be taken to be correct copies of the originals which they purport to represent, with the same force and effect as though the originals or certified copies thereof were offered in evidence, subject to correction as the facts may appear.

Counsel for complainant offers in evidence Patent Office copy of United States Letters Patent No. 686,617 issued November 12, 1901 to H. B. Keiper for Improvement in Ball Retainers, and the same is received and marked "Complainant's Exhibit D, Keiper Patent;" also offers in evidence Patent Office copy of U. S. Letters Patent No. 624,219 issued May 2, 1899 to E. Klahn for Improvement in Ball Bearings, and the same is received and marked "Complain- 65 ant's Exhibit E, Klahn Patent." It is stipulated that the foregoing copies of Letters Patents offered in evidence may have the same force and effect as the originals or duly certified copies thereof.

Counsel for complainant further offers in evidence copy of parent specification of Christian F. Dilg for Improvement in Ball Bearings, Serial No. 655,652, and the same is here spread upon the record, marking as an exhibit being mutually waived. It is stipulated that said specification was filed September 18th, 1897, in the United States Patent Office, and that the application of which it forms a part was filed complete October 18, 1897. It is mutually agreed that the words and figures enclosed in brackets were subsequently erased by amendment, and the words in small type inserted. It is further agreed that the previous stipulations relative to correctness of copy and competence of offer in evidence, requirement of certified copy being waived, may apply in the present instance.

Parent Specification, 1897.

To all whom it may concern:

Be it known that I, Christian F. Dilg, a citizen of the United States and a resident of New York in the county and State of New York certify that I have invented $\overset{\text{a}}{\wedge}$ certain new and useful ball bearing of which the following is a specification:

My invention relates to ball holding devices, and particularly to that class of ball bearings wherein a holder is used having a series of ball bearings points to retain the balls, the latter projecting beyond the device, in the inner and outer, and in the upper directions $\overset{\text{with respect}}{\wedge}$ thereto, $\overset{\text{and it}}{\wedge}$ has for its object the provision of an organization, simple in construction, inexpensive to manufacture, and which operates in a simple, easy, and noiseless manner in practical use.

66 To obtain the desired end, this, my invention consists in the construction, arrangement and operation of the parts therein set forth.

In the drawings which accompany, and form a part of this specification, figure 1, represents a plan view of a ball bearing embodying my invention; figure 2, is a plan and figure 3, is a front elevation of my ball holding device: figures 4, $\overset{\text{and 8 are}}{\text{[is a]*}}$ plan views $\overset{\text{of [all of]* my bearings}}{\wedge}$ having ball holding devices constructed according to my invention: and figures 5, 6, $\overset{\text{7}}{\wedge}$ and 9 are views in detail of my ball holding devices.

Like letters of reference indicate like parts in all the views:

I have found it desirable to construct a ball bearing of simple construction, and one that will be reliable and efficient as well as noiseless in practical use, and I have therefore, constructed according to my invention a*s* organization of the class described embodying the preferred construction of [a]* parts and their mutual relationship, combination, arrangement and organization in a composite body or structure, as hereinafter described.

Referring particularly to the drawings, A denotes my ball holding device[s]*, consisting ordinarily of a practically hor[r]*izontal, vertical ring having a series of inner and outer bearing points or detents, to retain the balls B; the said bearing points consisting, as in figures 2 and 3, of inner and outer practically vertical side flaps A^3, A^1, radially opposite each other, and extending upwardly from the ring, and also having a series of top plates A^2 practically parallel with the ring A.

[* Words and figures enclosed in brackets erased in copy when originally filed.]

Intermediate between each pair of inner and outer flaps, spaces or recesses A^4 are formed.

I sometimes construct my ball holding devices in the form of a corrugated ring as shown in figures 4 to 7. In this instance the edges of the top plates A^{12}, are parallel with each other, and the same extend above the centre line of the balls B, [and]* the side walls of the same a^2, constituting the recess A^4, which $\overset{\text{walls}}{\wedge}$ are prefer[r]*ably inclined in order that the upper portions of each recess
will be smaller than the lower part thereof. In this con-
67 struction my bearing points or detents consist[s]* of one or
more vertical prongs, as A^3, figure 5, located in the inner and outer portions of the recess A^4; or lateral prongs, as a^4, in figure 6, located along the inner and outer edges of the side inclined portions of my ring A. If preferred, the parts of my ring forming the lower portions of the recess A^4 may be circular in form, as shown in figure 7, or they may be rectangular, as A^{30}, figures 8 and 9 and to the top plates A^{12} may be secured supplementary plates A^{13}, provided with projecting bearing points or detents a^5.

It is manifest that various om*m*issions of some particulars could be made without materially *e*ffecting the essential portions of my invention or the operation of the remaining parts, and, I do not, therefore, wish to be limited to the specific structural detail of the organization herein set forth. Obviously the elements of the structure described, may be located at an angle to the plane in which they are shown. I accordingly use the words, "hor[r]*izontal" "vertical" and the like in a relative sense.

In operation the balls B, are placed in the recesses between each pair of inner and outer bearing points or detents, and top plates, so that they project beyond the same in the inner and outer, and in the upper directions. The balls are thus securely held in place and by means of the construction shown, are allowed to move quite a long[g]* distance radially, and they are thus enabled to adjust themselves, in case of any wear of the $\overset{\text{bearing}}{\text{[same]}}$* [and]* the side bearing points or detents, as stated, preventing the balls from rolling out from their sockets.

As it is evident that many changes in the construction [un]* and relative arrangement of parts [;]* might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of the parts shown and described, and that such changes and equivalents may be substituted [,]* therefor, and that

What I claim as my invention is

68 1. In a ball bearing, a[nd]* ball holding device consisting
of a ring having a series of inner and outer detents, and also having a series of top plates $\overset{\text{practically}}{\wedge}$ parallel with the ri-g, and bal-s held in place between each pair of inner and outer detents and *l*op plates,

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[* Words and figures enclosed in brackets erased in copy when originally filed.]

so that the balls [they]* project beyond the device in ∧ the inner and outer and in the upper directions.

2. In a ball bearing, [and]* ball holding device consisting of a corrugated ring having a series of inner and outer ∧ detents, and also having a series of top plates, ∧ practically parallel with the ring, and balls held in [the]* place between each pair of inner and outer detents and top plates.

3. In a ball bearing, a ball holding device, consisting of a ring having a series of inner and outer detents, and also hav-ng a series of top plates ∧ practically parallel with rhe ring, and balls held in place between each pair of inner and outer detents[,]* and top plates. [so that they project beyond the device in the inner and outer]*

4. In a ball bearing, a ball holding device, consisting of a corrugated ring having a series of inner and outer detents, and also having a series of top plates, ∧ practically parallel with the ring, and balls held in place between each pair of inner and outer detents and top plates[;]* the adjacent edges of the recesses ∧ or plates [between the top plates,]* being practically parallel with each other.

5. In a ball bearing, a ball holding device, consisting of a ring, having a series of inner and outer detents, and also having a series of top plates, parallel with the ring, and balls held in the spaces between each pair of inner and outer detents[,]* and top plates, the side walls of the side spaces or recesses being inclined.

In testimony of the foregoing specification I do hereby sign the same in the city of New York in the county and State of New York this ninth day of Sept'b'r A. D., 1897.

CHRISTIAN F. DILG.

Witnesses:
CHAS. H. J. DILG.
JOHN W. SCHWAB.

69 *File Contents.*

Application, — papers.
1. Nov. 27, 1897, letter.
2. Letter to office, Dec. 8, '97.
3. Dec. 13, 1897, letter.
4. Jan. 11, 1898, letter.
5. Amendment A, Jan. 10, 1900.
6. Jan. 12, 1900, rejection.
7. Affidavit and substitute specification B, Feb. 14, 1900.

Counsel for complainant offers in evidence a full-sized photographic copy of the sheet of drawings filed September 20, 1897, in connection with the parent application for United States Letters

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[* Words and figures enclosed in brackets erased in copy when originally filed.]

Patent of Christian F. Dilg for Improvement in Ball Bearing, Serial No. 655,652, from which the application involved herein, Serial No. 5434, was divided, and the same is received and marked "Complainant's Exhibit F, Drawing in Parent Application." It is agreed that the underscored words "Original Drawing" appearing in the upper left-hand corner thereof, and the words and figures "Cancelled for Division 5434" near the left-hand margin just above the middle of the sheet, and the words and figures "Retained in Original Case 655652" appearing therebelow, and the heavy line separating figures 1, 2 and 3 from figures 4, 5, 6, 7, 8 and 9, and the two marks crossing each of said latter figures, together with the numerals 1, 2, 3, 4, 5 and 6 appearing in connection with said latter figures respectively, were placed upon said photographic copy subsequent to its receipt from the Patent Office. With the exceptions noted, it is agreed that said copy is a correct reproduction of the original drawing and may operate as though certified, subject to further correction as the facts may appear.

70 Sigmund Herzog, produced as a witness on behalf of the complainant, having been first duly sworn and cautioned, in answer to interrogatories propounded by counsel, testifies as follows:

Q. 1. Please state your name, age, residence and occupation? A. Sigmund Herzog; 27; 26 Cortland St., New York; mechanical engineer. I am also a draftsman.

Q. 2. Please state your qualifications somewhat fully to testify relative to drawings and specifically Patent Office drawings in this cause? A. I am a graduate of the Royal Technical University of Budapest. After I graduated I was employed by patent attorneys in Budapest, and two years ago I came to this country, and since that time I made drawings for different patent attorneys. Since the 8th day of December, 1905, I am a registered patent attorney. Since the year 1895 I was employed in a factory in Budapest as a draftsman until about 1901. In Budapest I assisted several persons in prosecuting their applications for Letters Patents. When I was working for patent attorneys in Budapest I wrote out specifications in connection with the drawings.

Q. 3. I hand you "Complainant's Exhibit F, Drawing in Patent Application," and ask you to state whether or not you have examined this drawing before? A. Yes, I have examined this drawing before.

Q. 4. Please state what, if anything, you have done in connection with this drawing Exhibit F? A. I marked the lines shown thereon in pencil in figure 2. I wanted to find out whether the upper edges of the parts marked A^2 are parallel or not. I found they are not parallel but converge toward the centre of the figure.

The last statement of the witness is objected to as beyond the scope of the question, which did not ask what the witness found after he had drawn the lines upon the drawing.

71 Q. 5. Now please state what method you employed, the result of which you state was the discovery that the edges of

the top portions of adjoining standards converged toward the centre of figure 2? A. I laid a rule on the lines, using a magnifying glass to find out the direction of the lines.

Counsel for the defendant objects to all testimony of this witness to the effect that the lines referred to converge on the drawing Exhibit F, for the reason that said exhibit is before the court, and it is within the ability and province of the court to determine for itself by its own inspection and examination of the exhibit in question whether the edges of adjacent parts A^2 are converging or parallel.

Q. 6. How many lines did you draw? A. I drew 6 lines.

Q. 7. Then you tested, as I understand it, the question of the convergence or non-convergence of adjacent edges of the top portions of adjacent standards by drawing lines along these edges and insuring the accuracy of your work by the aid of a magnifying glass; is this a correct summary of your testimony in this respect? If not, please indicate wherein I may be mistaken?

Counsel for defendant objects to this question as incompetent, irrelevant and immaterial for the reasons given in the objection made in connection with Q. 5. The question is also objected to as leading.

Counsel for complainant calls the attention of the court to the fact that the foregoing question was intended as a summary and not as an attempt to bring out anything new. If there is any doubt upon this point, the foregoing testimony is referred to as corroborative.

A. Yes, this is a correct summary of my testimony.

Q. 8. What would your opinion be as an expert draftsman having
made the tests relative to the question of convergence or
72 lack of convergence of adjacent edges of adjacent top por-
tions A^2, figure 2 of this Exhibit F, if the statement were
made that these edges are parallel and do not converge toward the
center of the figure?

Objected to as incompetent, irrelevant and immaterial, in that it is not apparent what bearing the opinion of the witness can have upon a question so obviously one for the determination of the court from inspection of the exhibit.

A. If the statement were made that the edges are parallel and do not converge toward the centre of the figure, it would still remain that they converge toward the center, for the reason that the tests made relative to the question of convergence or lack of convergence were made with a magnifying glass.

Cross-examination by Mr. Bayard:

X Q. 9. Mr. Herzog, you have testified in answer to Q. 2 to the effect that you are an expert in the reading of drawings, have you not? A. Yes.

X Q. 10. Is it your opinion that an expert is required to determine whether two lines upon a drawing are parallel or converging? A. My opinion is that in this case it is necessary, because the lines are so short that it cannot be found out by an ordinary draftsman whether they are parallel or not.

X Q. 11. I find 6 pencil lines upon the figure numbered 2 upon the upper half of the drawing introduced into this case as Exhibit F. Were these lines upon the drawing when you first saw it? A. They were not.

X Q. 12. Did you make them? A. I made them.

X Q. 13. I have placed on the drawing the letters *a a* to designate one of these lines, and the letters *a′ a′* to designate an adjacent one. Is it the convergence of these lines *a a* and *a′ a′* which forms the basis of your testimony that the edges of adjacent parts A^2 are converging and not parallel? A. Yes, this forms the basis of my testimony. 73

X Q. 14. Does the line *a a* pass through and coincide with the edges of two parts A^2 upon opposite sides of the device? A. It passes through but doesn't coincide with the upper part A^2, but goes through and coincides with the edge of the lower part A^2.

X Q. 15. When you drew the line *a a,* why was it that you did not make it coincide with each of these edges? A. I paid no attention at all to the edge of the upper part A^2, but I had only in view the edge of the lower part A^2.

X Q. 16. Then the 6 lines in pencil on this figure were not intended to show convergence of the edges of the parts A^2 adjacent 6 of the openings appearing on this figure, but only of 3 of them; is this true?

X Q. 16 withdrawn.

X Q. 17. I have numbered the openings between the parts A^2 1, 2, 3, 4, 5, 6, 7 and 8. Were the lines *a a* and *a′ a′* drawn to indicate convergence of the edges adjacent both the openings 1 and 5? A. They were not. They were only drawn to indicate convergence of the edges adjacent the opening 5.

X Q. 18. Is it not a fact that by reason of the coarseness of the lines of the original drawing and the fineness of the pencil lines, that the pencil lines could have been made parallel and yet represent the directions of the sides as truly as at present? A. Well this could not have been made.

Cross-examination closed.
Deposition closed.
(Sgd.) SIGMUND HERZOG.

74 Albert V. T. Day, a witness produced on behalf of the complainant, having been duly sworn and cautioned, in answer to interrogatories propounded by counsel, testifies as follows:

Q. 1. Please state your name, age, residence and occupation? A. Albert V. T. Day; 28; 151 Amity Street, Brooklyn, N. Y.; patent attorney and expert.

Q. 2. Please state any qualifications which you may possess tending to qualify you to testify as a patent and mechanical expert in this cause? A. In 1896 I completed a technical education at the Pratt Institute of Brooklyn. This technical course included an exhaustive study of mechanical drawing and the design of machinery. During my studies at the Pratt Institute I invented a roller bearing which led me into a study of the prior art relating to this subject. For a number of years after completing the foregoing technical course, I was employed by various manufacturing corporations, firms and individuals as a mechanical draftsman and as designer and inventor of various kinds of automatic and special machinery. Particularly with reference to my qualifications in this case I was employed as designer and inventor for the Pulverized Coal Stoker Company of Brooklyn, manufacturers of machinery including roller bearings and ball bearings which were subjected to unusually hard usage and hence required a most careful consideration. Also with regard to my qualifications in this particular case, I was associated with Mr. J. E. Baldwin, then of the firm of Baldwin & Bartels, bicycle manufacturers of East Williston, Long Island. As an adjunct to the Baldwin & Bartels manufactory, Mr. Baldwin and myself maintained a laboratory of experiment and invention. In this last connection I have built many bicycles with my own hands, even to the primary operations of brazing the frame tubes together, etc., and still more particularly, I devoted much time to inventing and designing bicycle crank shafts and hangers and the ball bearings and ball separating and ball retaining devices accessory thereto. My study along this line was exhaustive because I was called upon to produce special ball bearings to withstand particularly hard usage in motor bicycles where the bearings were subjected to the shock of explosions in an explosion engine.

After such practical experience as I have indicated in the foregoing, I became interested in patent work through the prosecution of applications for Letters Patent on my own inventions, working at first with the coöperation of my own attorneys, who were among the best in New York. Subsequently I became a regularly registered patent attorney, and for a number of years have been engaged in work relating to patents generally and including associate work with a number of New York patent attorneys, prosecution of applications for Letters Patent for my own clients, preparation of briefs and arguments generally, appeals before the Board of Examiners and the Commissioner of Patents, rendering opinions as to the construction, validity and scope of patent claims, giving of expert testimony in patent litigation, preparation of expert affidavits for use in motions and counter-motions for preliminary injunction, and the rendering of expert opinions generally. Aside from my work relative to patents I have frequently been called as an expert to pass upon the operativeness and general efficiency of new or proposed forms of automatic machinery, involving many details of consideration mechanically allied to the questions which appear to be involved in the present issues.

In the consideration of questions of infringement, I have frequently been called upon to analyze patent claims and determine the presence or absence of their subject-matter in mechanical devices offered as exhibits in the form of models or illustrative drawings.

Q. 3. Have you read and do you understand the original divisional application of Christian F. Dilg covering improvement in ball bearings Serial No. 5434 involved in this cause? A. I have and I do.

76 Q. 4. Do I understand that your answer includes the specification as amended April 24, 1900, together with the drawings in the case, specifically "Complainant's Exhibit B?" A. Yes.

Q. 5. Please compare the combination of elements as called for in the following claims with the structure shown in figure 2 of "Complainant's Exhibit B," taking said drawing in connection with original divisional application as filed February 16, 1900, or as amended April 24, 1900, or both, and state whether or not you find that these claims or any of them properly describe and are applicable to the structure shown in figure 2 of said exhibit, stating also any matter which you find in the disclosure of the invention forming a proper foundation from the patent standpoint for the application of such claims to the structure. The claims are as follows:

"14. A ball-retaining device for ball bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

"15. A ball retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts."

"16. A ball-retaining device for ball bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

Adjourned to Wednesday, October 24, 1906, at 10 A. M., same place.

77 NEW YORK, *October* 24, 1906.

Met pursuant to adjournment.
Present: Parties as before.

Direct examination of Mr. DAY continued:

Question 5 is objected to by counsel for the defendant as incompetent, irrelevant and immaterial, in that it calls for the opinion of the witness upon a matter of ordinary language which the Court can determine best from the facts in evidence without reference to the opinions of witnesses.

A. After analyzing claim 14 I find that each element of the claim is present in the structure represented by figure 2 of the exhibit drawing, and that the elements in this structure are co-organized in exact accordance with the correlation of the elements as set forth in this claim 14. The claim is for "a ball-retaining device for ball bearings," comprising (*a*) "a ring-shaped portion or base," which, in the structure of figure 2, is embodied in the annulus A; (*b*) "a series of standards springing from one edge thereof only," *i. e.,* from only one edge of the ring-shaped portion or base, and in the structure of the exhibit drawing, embodied in the standards A′ rising or springing in this particular instance from the outer edge only, and best illustrated in figure 3, which is a side view of the ball retainer illustrated in figure 2; and (*c*) "sector-shaped or flaring angularly arranged extensions" provided on the series of standards and exemplified in the extensions marked A^2 in the drawing and angularly connected with the standards A′, being in this instance connected with such standards so as to form right angles therewith. The claim concludes with a "whereby" qualification to the effect that the foregoing combination results in forming suitable spaces for receiving and confining the balls between adjacent standards. I find 78 that the co-organization of the claim as represented in the exhibit drawing is well adapted to this purpose, and figure 2 represents a bearing ball B, "confined between adjacent standards." From the foregoing considerations it seems to be an inevitable conclusion that claim 14, to quote the language of counsel, "properly describes and is applicable to the structure shown in figure 2" of the exhibit drawing. As to the foundation for this conclusion in the disclosure of the invention, it is probably sufficient at this point to state that the original and amended specifications referred to in the question of counsel fully and adequately describe the correlation of elements which is set forth in this claim 14 and which I have briefly identified in the exhibit drawing. I may say in conclusion, as to claim 14, that the elements of this claim as embodied in the drawing in their defined relationship constitute together a complete and wholly operative ball retainer which, from my experience in this line of work, I believe to be in every way satisfactory.

Claim 15 is substantially equivalent in its designations to claim 14 except that its "whereby" clause states that the balls "are sprung into" the ball-receiving space between the parts of the ball retainer. It is quite apparent to me that if the ball retainer illustrated in the exhibit drawing is made of resilient metal such as should be used in its proper construction, the balls may be readily sprung into place between the retaining parts of the device.

Claim 16 also defines the same co-organization as claim 14, with an additional limitation to the effect that the series of standards spring "axially" from one edge of the ring-shaped portion or base. I take this expression to mean that the series of standards extend from the ring-shaped portion or base in parallelism with the geometric axis of such base, and figure 3 of the exhibit drawing, which is a side view of figure 2, clearly shows that the series of standards A′, identical with those named in claim 16, are almost exactly parallel with the geometric axis of the ring-shaped 79 portion or base A, although there is a slight deviation from exact parallelism discernible by the eye but by no means sufficient to affect any function which resides or would reside in an exactly parallel disposition.

It may be desirable to note here that the ball retainer illustrated in figures 2 and 3 of the Exhibit B drawing and described in the specifications referred to by counsel's foregoing question, includes an auxiliary series or second series of ball-retaining standards A^3 rising from that edge of the ring-shaped portion or base opposite the edge from which rise the series of ball-retaining standards referred to in the claims quoted by counsel. The series of ball-retaining standards defined in the claims is that series which is provided with sector-shaped or flaring extensions and which series, in the embodiment of the exhibit drawing, is connected with the outer edge of the ring-shaped base only. The series of ball-retaining standards referred to by the claims as having sector-shaped or flaring extensions, and embodied in the standards A' and extensions A^2 of the drawing, serve to retain the ball in two directions, *i. e.,* they prevent the ball from being withdrawn in one radial direction and in one direction of parallelism with the axis of the ball bearing; while the ring-shaped portion or base serves to retain the ball from withdrawal in the opposite direction of axial parallelism. Hence the ring-shaped base with its standards and sector-shaped extensions defined in the claims and embodied in the structure of the drawing, form a complete operative combination for retaining the balls in three directions; the auxiliary or supplemental series of ball-retaining standards A^3 of the drawing being only useful to retain the balls in the fourth direction in cases where the balls are not retained by the presence of an axle or other component portion of the entire ball bearing, or in cases where it is desirable to wholly remove the ball retainer and balls intact together. In this connection it may be of interest to note that a standard and well known form of ball retainer which is regularly designated as a ball retainer consists merely in a single washer so fixed to the ball-race or axle as to retain the balls in one direction only, the balls being retained in all other directions by engagement with the ball-race or axle.

Not only does the co-organization of ring-shaped base, ball-retaining standards and sector-shaped extension defined in the claims and embodied in the drawing, perform its function of retaining the balls in three directions and perform such function without dependence on the auxiliary series of standards A^3, but when such auxiliary series of standards is dispensed with, this co-organization of the claims by a proper embodiment coming wholly within the limitations of the claims, may be made to discharge, in addition, the function of the auxiliary ball-retaining standards thus dispensed with, in which event the co-organization of the claims will retain the balls in all directions. I have in my hand a model of a ball retainer which corresponds substantially to that illustrated in figures 2 and 3 of the Exhibit B drawing excepting that the auxiliary ball-retaining standards are omitted from the model and the model includes seven ball retaining standards provided with sector-shaped extensions in lieu of the eight standards and extensions of the

drawing, this last difference being of course quite an immaterial one. In this model the sector-shaped extensions are so formed that the adjacent edges of adjacent extensions are not parallel, but slightly converge as they approach the axis of the ring-shaped base. As a result, the ball held between adjacent sector-shaped extensions binds and is caught between the adjacent edges of the extensions when an attempt is made to withdraw the ball inwardly from the ball-receiving space between such extensions. But even if the adjacent edges of adjacent sector-shaped extensions are parallel with each other, the foregoing result of retaining the ball from inward withdrawal may be accomplished by bending the extremities of the sector-shaped extensions slightly down toward the ring-shaped
81 base, so that the projected plane passing through the extremities of the sector-shaped extensions and parallel to the ring-shaped base intersects a larger section of the ball than that plane which is parallel to the base and intersects the sector-shaped extensions at their points of juncture with the ball-retaining standards. At this point it may be noted that the specifications mentioned in counsel's question are quite compatiable with the first mentioned expedient for retaining the balls from withdrawal in the inward or fourth direction and without employment of the auxiliary standards A^3 of the drawing, since these specifications clearly indicate that the adjacent edges of adjacent sector-shaped extensions need not of necessity be parallel and hence might converge as they approach the axis of the ring-shaped base so as to retain the ball from inward withdrawal in the manner which I have above explained. I quote here from the original divisional specification where the same refers to a modified form of ball retainer different in specific construction from the ball retainer of figures 2 and 3 which I have considered in the foregoing. It is stated:

"I sometimes construct my ball-holding devices in the form of a corrugated ring, as shown in figures 4 to 7. In this instance the edges of the walls of the recesses A^4 formed between the upper portion A^{12} of the ring, are parallel with each other."

Recess.

Answer to Q. 5 resumed:

The statement above quoted appears also in the divisional specification as amended April 24, 1900. The reference to the parallelism of the opposing edges as a distinctive feature of this particular instance or example of the applicant's invention, clearly implies that it is not a feature necessary to the invention broadly or generally,—clearly implies that the adjacent edges of the adjacent sector-
82 shaped extensions of figure 2 need not, of necessity, be parallel. I note, further, that the specifications include various other references clearly indicating that the structure of figures 2 and 3 is regarded merely as one preferred construction which may be modified to suit the needs of any particular usage. The employment of the ball retainer of figures 2 and 3 without the auxiliary ball-retaining standards A^3 appears to be anticipated in the follow-

ing statements which appear in the original divisional specification as amended April 24, 1900:

"It is manifest that various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not, therefore, wish to be limited to the specific structural details of the organization herein set forth."

* * * * * * *

"Obviously, my ball-retaining device may be advantageously employed in many kinds of bearings or sockets, and I do not therefore wish to limit myself to the use of my device in connection with ball bearings of the kind shown alone."

Q. 6. I believe you have stated that you have had practical experience in the art relating to ball bearings and ball retainers. Please state whether the structure disclosed in figures 2 and 3 of Complainant's Exhibit B and as described in the specification relating thereto would be a practical and operative device if there were no series of auxiliary retaining posts A^3, and if the top portions or extensions A^2 were neither bent downwardly so as to prevent balls from escaping inwardly nor had edges which in adjacent top portions or extensions converged toward the centre of the ball retainer;
in other words, if provision were only made to restrain the
83 balls from escaping from the retainer upwardly, downwardly
and outwardly? In this connection please state your reasons for your conclusion? A. The specific ball retainer outlined by your question would be an operative ball retainer, both theoretically and commercially. It would have many practical uses. Such a ball retainer is exemplified in the model referred to in my foregoing answer if the adjacent edges of adjacent sector-shaped extensions be made exactly parallel with each other and if such extensions be disposed in plane parallel with the ring-shaped base so that these sector-shaped extensions cannot retain the balls from being withdrawn inwardly. A ball retainer thus constructed may be slipped over a round axle, the balls being inserted in the ball-retaining spaces either before the ball-retainer is slipped over the axle or such balls being sprung into place after the ball retainer is in place on the axle. The operation of thus assembling the ball retainer, balls and axle may be aptly illustrated by slipping the ball retainer over the middle finger employed to represent the axle. When thus assembled with the axle, the ball retainer serves to retain the balls in their proper positions relative to one another and to the axle, and the ball cup or ball-race may be removed without resulting in spilling the balls, or, in the case of a bicycle crank shaft, the crank shaft may be wholly withdrawn from the crank hanger and ball-races, the ball retainer and balls coming off intact with the axle, and the balls not being spilled. To thus avoid spilling the balls when dismembering a bicycle is the prime function of the ball retainer in its adaption to bicycles, although this particular ball retainer also performs a ball-separating function conducive to the antifriction results. To show how generally the last proposition applies to ball retainers having the broad characteristics of this model, it may be

noted that if the sector-shaped extensions are connected with a series of standards springing from the inner edge of the ring-shaped base in lieu of the outer edge thereof, the ball retainer will then 84 of itself retain the balls from withdrawal in all directions except the outward radial direction, and when inserted into a hollow cylindrical ball-race with balls placed in the ball-retaining spaces of the retainer, will effectually retain the balls intact with the retainer and in proper positions relative to one another and to such retainer, even after the axle is wholly withdrawn. In this last instance the ball retainer accomplishes the most desirable result of permitting the axle to be withdrawn without spilling the balls, and permitting the ball-race, ball retainer and balls to be freely handed as an intact unit.

Counsel for complainant offers in evidence the sample ball retainer referred to by the witness in answer to Q. 5 and Q. 6, and the same is received and marked "Complainant's Exhibit G, Ball Retainer without inner series of auxiliary retaining posts."

Q. 7. Generally speaking, have ball retainers any function except that of separating the balls after the balls are in position in the ball-race and the ball cup and shaft or crank are in position? A. After the ball retainer is assembled in operative conjunction with the ball-race, axle, etc., the ball retainer performs no function except that of separating the balls to enhance the efficiency of the bearing by avoiding the sliding friction of the balls one upon the other.

Q. 8. Then in cases where ball retainers have the function of separating the balls, I understand that with that exception such ball retainers are principally of use during the process of assembling the parts of a bearing or disassembling the same? A. Yes, that is the principal utility of such a ball retainer in addition to its ball-separating function.

Q. 9. In your practical experience in the bicycle art, have you become acquainted with the principal styles or shapes of oil cans, and if so, please mention two of these shapes?

Question objected to by counsel for defendant as incom- 85 petent, irrelevant and immaterial, for the reason that oil cans have no apparent bearing upon the question in issue.

By Mr. Duell: The bearing will appear somewhat more fully later.

A. My consideration of oil cans has been somewhat casual. I am familiar with the ordinary conical or so-called "flaring" oil can and with various other shapes which I would not attempt to designate by their trade names. The flaring oil can is the commonest in my experience.

Q. 10. I hand you a portion of an advertising folder upon which two types of oilers are illustrated. Please state whether either of these types is that to which you refer as "flaring," and if so, which one? A. The can represented on the right is the flaring can.

Counsel for complainant offers in evidence the portion of the advertising folder referred to by the witness, and the same is received and marked "Complainant's Exhibit H, Illustration of Flaring Oiler." It is agreed that Exhibit H above offered in evidence is a portion of an advertising folder of a manufacturer of oil cans of Brooklyn, New York.

Q. 10 and answer and the Exhibit H are objected to for the reasons stated in the objection to Q. 9.

Q. 11. I hand you "Complainant's Exhibit F, Drawing in Parent Application," and ask you whether or not you can discern in original figure 3 thereof that the adjacent edges of the top portions or extensions of the two standards nearest the letter B are illustrated? If you find the edges illustrated, please explain the bearing thereof upon the question of convergence or lack of convergence of these edges toward the centre of the ball retainer? A. In figure 3 I discern a double line extending from the upper end of the ball-retaining standard on either side of the ball B. The double line extends from each standard toward the ball and terminates near the ball. 86 Each double line is a foreshortened view of that edge of the sector-shaped extension A^2 nearest the ball B; and the fact that these edges are in view in this figure 3, which is a front elevation of figure 2, conclusively proves that these edges converge as they approach the centre or axis of the ring-shaped base A.

Adjourned to Thursday, October 25, 1906, same time and place

NEW YORK, *October* 25, 1906.

Met pursuant to adjournment.
Present, parties as before.

Direct examination of MR. DAY continued:

Counsel for complainant offers in evidence an enlarged view of figure 3 of "Complainant's Exhibit F, Drawing in Parent Application," and the same is received and marked "Complainant's Exhibit J, Enlarged View of Original Figure 3." It is mutually agreed that Exhibit J above offered in evidence represents original figure 3 substantially to scale, and that the portions marked *x* and *y* indicate the adjacent edges of top extensions of adjacent standards referred to by the witness in answer to Q. 11.

Q. 12. You have stated that claims 14, 15 and 16 quoted upon the record and involved herein are properly applicable to the invention as disclosed in the original divisional specification of February 16, 1900, and as shown specifically in figures 2 and 3 of the drawing. Now please direct your attention particularly to the language in claim 14 "sector-shaped or flaring angularly arranged extensions," and state where you find such extensions disclosed in the divisional application, also stating whether the language quoted properly describes the extensions to which you refer, giving your reasons for your finding?

87 Counsel for the defendant objects to the question as incompetent, irrelevant and immaterial in that it calls for the opinion of the witness upon matter of ordinary language, which the

Court can determine best from the facts in evidence without reference to the opinions of witnesses.

By Mr. Duell: The witness has been asked for matter of fact with which he should be acquainted through his experience as a patent expert and through his practical experience in the art.

By Mr. Bayard: Attention of the Court is called to the opinions of the witness upon the meaning of language given in his answer to Q. 5 similar to the present question.

A. The "sector-shaped or flaring angularly arranged extensions" are aptly disclosed by illustration in figures 2 and 3 of the Exhibit B drawing, which, of course, forms a part of the divisional application referred to in your question. In these figures the extensions in question are designated by the reference character A^2. Also in the original divisional specification I find what I will now quote with explanatory parenthetical insertions of my own:

"Referring particularly to the drawings, A denotes my ball-holding device located in the chamber formed by the inner flanges of the hub A^{21} and the cones of the axle A^{22}, and consisting ordinarily (that is to say, not of necessity embodied in the specific form defined by the following language) of a practically horizontal ring having a series of inner and outer bearing points or detents, to retain the balls B; the said bearing points consisting, as in figures 2 and 3 (that is to say, as specifically embodied in the structure of these figures), of inner and preferably wider outer and practically vertical side flaps or upwardly extending projection A^3, A', radially
88 opposite each other, and extending upwardly from the ring
(that is to say, in this particular instance the bearing points consist in one series of inner substantially vertical side flaps or projections A^3 and one series of outer substantially vertical side flaps or projections A' preferably wider than the inner projections, both series of projections extending upwardly from the ring and each inner projection being radially opposite one of the outer projections); either of them (here the language refers to either of a single pair of radially opposite side flaps A^3, A') also having a preferably tapering extension or top portion of plate A^2, practically parallel with the ring A, and bent over so that it contracts or lies adjacent to its oppositely disposed raised projection (the tapering extension between a continuation of either the inner or the outer side flap according to constructive preference, and being bent over into substantial parallelism with the ring or ring-shaped base, so that it projects toward the radially opposite side flap so as to make contract therewith or lie closely adjacent thereto; for instance, in the specific embodiment illustrated in figures 2 and 3 of the Exhibit B drawing, the tapering extension or plate A^2 consists in a continuance of the outer side flap A', which continuance extends radially inward toward the adjacent inner side flap A^3)."

In the divisional specification as amended April 24, 1900, I find a sentence almost exactly the same as the sentence above quoted from the original divisional specification.

As to the particular query—does the language "sector-shaped or flaring angularly arranged extensions" properly describe the exten-

sions A^2 (of the Exhibit B drawing) referred to in the foregoing quotation from the specification as a "tapering extension or top portion or plate A^2?" Obviously "sector-shaped" designates
89 something having or approximating the shape of a sector.
A sector is that plane figure of geometry which is bounded by two radii and the arc of a circle subtending these radii. In figure 2 of the Exhibit B drawing the extension A^2 is represented in plain view and presents a substantially exact outline of a geometric sector. The specification aptly refers to this sector-shaped extension as a "tapering extension," because the sector tapers from its outer arc-shaped edge toward its inner end or vertex. The applicability of the word "flaring" might be wholly settled by noting the employment of this word as an alternative synonym for "sector-shaped," since these words are united by the alternative conjunction "or" in the expression "sector-shaped or flaring angularly arranged extensions." For this reason alone, it is apparent that "flaring" can only mean "sector-shaped." However, the word "flaring" taken alone is quite apt in its designation of the sector-shaped extension A^2 which flares or diverges as it recedes from its vertex or from the geometric axis of the ring-shaped base A of figure 2. The word "flaring" as applied to a flaring trumpet or the like, means a trumpet or a thing which diverges in its outline, just as the tapering extension A^2 diverges from its vertex. And just here it may be most conveniently noted that the expression "tapering extension" above quoted from the specification, of necessity designates an extension which is divergent or flaring, since any device which tapers in one direction must of necessity diverge or flare in the other direction. Conversely the word "flaring" must of necessity mean a device or thing which tapers, since anything which is flaring or divergent in one direction must necessarily be convergent or tapering in the other direction. Hence the word "tapering" of the specification and the word "flaring" quoted by counsel, although differing in their mode of application to a given thing, must of necessity designate the same quality or attribute of that thing and are, therefore, in this sense synonymous.

As to the expression "angularly arranged extensions" included in the quotation of counsel's question—the arrangement of
90 the extensions A^2 substantially at right angles to the standards or side flaps A' which support them, is so aptly illustrated in figure 3 of the Exhibit B drawing and so fully described in my foregoing quotation from the specification that I assume counsel does not wish me to give further consideration to this particular portion of his quotation.

Recess.

It is mutually stipulated that Patent Office practice requires, and has required for many years, that alternative terms appearing in claims must be synonymous in their structural significance and not alternative in significance.

It is further mutually agreed and understood that claims 1 to 13 inclusive and claims 17 and 18 appearing in the amendment of

October 5, 1903, and heretofore spread upon the record, have been allowed, claims 17 and 18 having been allowed upon appeal to the Board of Examiners in Chief. The foregoing is subject to correction should the facts appear otherwise.

Q. 13. Must the term "flaring" comprehend the idea that the outline of a structure to which it is applied is curved, more specifically concaved, or in this connection does it merely comprehend the idea of divergence, which divergence may be along straight lines?

The question is objected to by counsel for defendant as incompetent, irrelevant and immaterial, in that it calls for the opinion of the witness upon a matter of ordinary language which the Court is competent to determine from the facts in evidence; and in that it does not appear wherein the witness is specially qualified to instruct the Court upon the meaning of this word.

91 By Mr. DUELL: The record speaks for itself, and the above objections are accordingly in nowise assented to.

A. The words "flaring" designates a divergent form, not necessarily a curvilinear divergence, but, in its application to the sector-shaped extensions of the application at issue herein, a divergence along straight lines.

Q. 14. Is the fact to which you have testified a well known one in practical mechanical arts? A. It is.

Q. 15. I hand you "Complainant's Exhibit E, Klahn Patent," and ask you to state the bearing or application of the language appearing in the two claims thereof as follows:

"* * * extensions flaring inwardly from the flaps in parallel position with the base and having their lateral edges concavely cut out."

Question objected to by counsel for defendant as incompetent, irrelevant and immaterial, in that the appearance of certain language in a single patent evidently furnishes no authoritative guide to the true meaning of such language.

The question is withdrawn and the bearing of the subject-matter referred to will be made to appear later.

Q. 16. Referring to claim 14 in controversy, please state which series of standards the word "only" in the third line thereof comprehends?

The question is objected to by counsel for defendant as incompetent, irrelevant and immaterial, in that it calls for the opinion of the witness upon a question of the meaning of ordinary language.

A. Grammatically the word "only" is an adverbial limitation to the adjective "one" which designates one edge of the ring-
92 shaped portion or base, to wit, that particular edge "having a series of standards * * * provided with sector-shaped or flaring angularly-arranged extensions." Obviously this limitation of the adjective "one" by the adverbial qualification "only" is wholly superfluous, since the word "one" in itself means only one, the word "only" being merely the adverbial form of the adjective designation

called "one." Hence the expression "only one" is equivalent tautologically to the expression "a reddish red ferryboat" or "a greenish shade of green."

Q. 17. As an abstract proposition based upon your experience as a patent expert solicitor, would the word "one" or the word "a" appearing in a claim, in and of itself prohibit the presence of a plurality of elements of the kind with which such word was used in a claim?

The question is objected to by counsel for defendant as ambiguous and indefinite and because it is not apparent wherein the same has any bearing upon the present case.

A. The article "a" or the equivalent adjective "one" is very often used to designate a given one of several similar components or features of a structure in claims formulated for the purpose of covering that given component or feature, for instance, in a subcombination not including the other similar features or components. But of course such a use of "a" or "one" in such a claim does not prohibit the presence of the additional similar features in the entire structure of which the subcombination forms only a part.

Q. 18. Referring to claim 14 involved herein, does the claiming of a series of standards having certain definitive characteristics, to wit, sector-shaped or flaring extensions, which series is claimed and defined as springing from one edge only of a ring-shaped base, prohibit, or is it incompatible with, the existence of another series of standards not having the same definitive characteristics springing from the other edge of said base?

93 Question objected to by counsel for defendant as ambiguous and indefinite, and because it is not apparent wherein the same has any bearing upon the present case. It is further objected to as apparently calling for a conclusion of law which it is the province of the court alone to draw.

A. Certainly the claiming of the series of standards characterized by the sector-shaped extensions does not prohibit and is in nowise incompatible with the existence of another series of standards not having the sector-shaped extensions and springing from the other edge of the ring-shaped base.

Q. 19. Does the fact that the defined series of standards is claimed as springing from one edge only of the ring-shaped base in anywise affect or lead you to modify your last answer?

The question is objected to by counsel for defendant as incompetent, irrelevant and immaterial, in that it has no apparent bearing upon the questions raised by this case, and because it apparently calls for a conclusion of law, on which the witness cannot instruct the court.

A. Certainly not.

Cross-examination by Mr. Bayard:

X Q. 20. Referring to "Complainant's Exhibit B, Copy of Drawings filed with Original Divisional Specification," and the standards

A^3 appearing thereon, will you tell me what is the purpose of these standards? A. The standards A^3 are provided to prevent withdrawal or displacement of the balls in an inward direction *i. e.*, toward the center or axis of the ball retainer as a whole, in cases where such displacement or withdrawal is not prevented by the presence of the axle or bearing cone, and in cases where it is desired to handle the ball retainer and the balls intact together and 94 separate from the rest of the ball bearing, and, generally speaking, in cases where the inner set of standards A^3 is, for structural reasons, preferred to an inward convergence of the adjacent edges of adjacent sector-shaped plates or preferred to a downward bend of the sector-shaped plates, as a means for preventing such inward displacement of the balls.

X Q. 21. Then, as I understand you, the purpose of the standards A^3, when they serve a purpose, is to prevent withdrawal or displacement of the balls in an inward direction, that is, toward the center or axis of the ball retainer as a whole? A. Yes, sir.

X Q. 22. Do you find anything in the original divisional specification, which has been heretofore spread upon the record, specifically designating these standards A^3 and stating that they may be omitted? A. I can find no express statement to that effect.

X Q. 23. The ring A, so far as shown and so far as specifically described in the original divisional application when filed has standards springing from each of the two edges thereof, has it not? A. Yes, sir. This specific embodiment of the ring A has two series of standards, one series on each edge.

X Q. 24. It is this specific embodiment which you refer to in the course of your direct-examination as affording a basis for claims numbered 14, 15 and 16 whose *propriety* in the Dilg application is here in controversy? A. Yes, sir. This specific structure appears to embody the whole invention, including the inventive sub-combinations set forth in these claims at issue.

X Q. 25. The ring A of the device shown in figures 2 and 3 of "Complainant's Exhibit B, Copy of Drawings filed with Original Divisional Specification" has a series of standards on each of its two edges, has it not? A. Yes, sir.

X Q. 26. Have you ever been in the oil can business? A. No, sir.

X Q. 27. In your answer to Q. 9 you state that the flaring oil can is the commonest in your experience. Can you state from your experience that oil cans of conical form are commonly designated as flaring? 95 A. My experience has shown that conical oil cans are frequently designated as "flaring," although, perhaps, not so frequently as to make this designation what you would regard as a common one.

X Q. 28. How many different persons have you heard apply the word "flaring" to an oil can, it being understood of course that your answer is a rough estimate? A. I cannot give even a rough estimate of the number of times I have heard this designation. The first time this designation was used in my presence impressed itself on my memory because it was then new to me and I stopped to consider its applicability. Aside from this, I simply retain the impression that the word is frequently used in this connection, without, however, remembering any other specific instance of its use.

X Q. 29. Would you be willing to swear that you have heard more than one person so apply this term? A. I do not feel that I can swear to any specific instance of the use of this word which I cannot specifically recall, and since, as I have just stated, the first use of this word in my presence is the only specific instance which I can specifically recall as to time, place, etc., I can only swear to hearing this word used by one person specifically.

Adjourned to Friday, October 26, 1906, same time and place.

New York, *October* 26, 1906.

Met pursuant to adjournment.
Present: parties as before.

Cross-examination of Mr. Day continued:

X Q. 30. In the course of your direct-examination you stated that the extensions A^2 of the complainant's device illustrated in figures 2 and 3 of "Complainant's Exhibit B. Copy of Drawings filed with Original Divisional Specification," might be bent down
96 towards the base ring A to retain the balls B against inward displacement and thus render the standards A^3 unnecessary. Do you find this bent-down position of the extensions A^2 shown in the drawing "Complainant's Exhibit B, Copy of Drawings filed with Original Divisional Specification"? A. I believe that my former testimony does not state, and certainly I did not intend to intimate, that a bending down of the sector-shaped extensions A^2 would be necessary in order to dispense with the inner series of standards A^3. However, in answer to your direct question, I do not find the extensions A^2 represented as bent down toward the ring-shaped base A in that specific embodiment of the ball retainer which is illustrated by the figures in question.

X Q. 31. Do you find these extensions shown as bent down from their position of parallelism with the base A in any specific embodiment illustrated in the Complainant's Exhibit B? A. No, sir.

X Q. 32. Do you find such illustration anywhere upon "Complainant's Exhibit F, Drawing in Parent Application"? A. No, sir.

X Q. 33. Do you find anything in complainant's original divisional specification heretofore spread upon the record specifically setting forth such bending down of the extensions A^2? A. No, sir—merely a broad specification with the usual insinuations that such simple modifications are contemplated by the applicant.

X Q. 34. Please read from the specification in question the said insinuations that such modifications were contemplated by the applicant? A. I find the following and underscore the words most directly presenting the insinuations:

"I have, therefore, construed according to my invention an organization of the kind set forth *embodying the preferred construction* of parts and their mutual relationship, combination, arrangement and organization in a composite body or structure, as hereinafter described."

* * * * * * *

97 "Referring particularly to the drawings, A denotes my ball-holding device located in the chamber formed by the inner flanges of the hub A^{21} and the cones of the axle, A^{22}, and *consisting ordinarily of* a practically horizontal ring having a series of inner and outer bearing points or detents, to retain the balls B; the said bearing points consisting, as in figures 2 and 3, of inner and preferably wider outer and practically vertical side flaps or upwardly extending projections A^3, A', radially opposite each other and extending upwardly from the ring; either of them also having a preferably tapering extension or top portion or *plate A^2, practically parallel with the ring A,* and bent over so that it contacts or lies adjacent to its oppositely disposed raised projection."

* * * * * * *

"Obviously the *elements* of the structure described *may be located at an angle to the plane in which they are shown.*"

X Q. 35. Do you find anything in Complainant's Parent Specification heretofore spread upon the record specifically setting forth that the extensions A^2 are to be bent down towards the base ring A from the position of parallelism shown on the drawings "Complainant's Exhibit B, Copy of Drawings filed with Original Divisional Specification"? A. I find no such specific statement—merely such broad insinuations as I have quoted from the divisional specification.

X Q. 36. I hand you "Complainant's Exhibit J, Enlarged View of Original Figure 3." In your answer to Q. 11, referring to figure 3 of "Complainant's Exhibit F, Drawing in Parent Application," of which figure 3, Exhibit J before you, is by stipulation an enlargement substantially to scale, you stated that you discerned a
98 double line extending from the upper edge of the ball-retaining standard on either side of the ball B. Please mark the two components of this double line with the letters *a* and *b*? A. I have done so.

X Q. 37. You state in the same answer that the double line extends from each standard toward the ball and terminates near the ball. Do the vertical lines which I have marked *c* on the drawing correctly represent the terminations to which you refer? A. Yes, sir.

X Q. 38. The spaces *x* and *y*, each bounded in part by the lines *a*, *b* and *c*, represent the edges of the extensions A^2, do they not? A. Yes, sir.

X Q. 39. And it is the appearance in this figure of these spaces *x* and *y* to which you refer in your answer to Q. 11 when you state that it is conclusively proved that these edges converge as they approach the center or axis of the ring-shaped base A? A. The appearance of both these spaces *x* and *y* in this elevation conclusively proves that the edges which they represent converge as they approach the axis of the ring-shaped base A, it being otherwise impossible to display both these edges in such an elevation by any legitimate rule or method of drafting, either projective or perspective.

X Q. 40. If it were not for the standards A^3, could not the ball B roll from the ball retainer without any interference from the alleged convergence of the edges x and y? A. Yes, sir, the ball B, as represented, being too small to engage the converging edges x and y when thus rolled inwardly from its proper place in the ball retainer.

Cross-examination closed.
Deposition closed.
(Sgd.) ALBERT V. T. DAY.

99 It is mutually stipulated that "Complainant's Exhibit J, Enlarged View of Original Fig. 3" may be withdrawn from the record and blueprints thereof substituted with the same force and effect.

It is stipulated and agreed that the index to file contents appearing upon pages 8 and 9 of "Complainant's Exhibit A, Transcript of Record before the Court of Appeals" may be spread upon the record after the original divisional specification heretofore spread upon the record, and that the same may be taken to be a correct record of the prosecution of the original divisional application subject to correction.

A corresponding stipulation is hereby made relative to a portion of the index to file-wrapper relating to the prosecution of the parent application Serial No. 655,652 filed complete October 18, 1897.

J. ODELL FOWLER, a witness produced on behalf of complainant, having been first duly sworn and cautioned, in answer to interrogatories propounded by counsel, testifies as follows:

Q. 1. Please state your name, age, residence and occupation? A. Jonathan Odell Fowler; 61; New York City; patent attorney.

Q. 2. Please state briefly your connection with this cause and with the matters involved therein? A. I prepared and filed the parent application for Mr. Christian F. Dilg in the fall of 1897, and have been engaged in the prosecution of the same up to the present time, that is to say, until the bill in equity was filed.

Q. 3. Do you know where the draftsman is who prepared the drawing for the parent case, "Complainant's Exhibit F, Drawings in Parent Application," and if so, please state where he is located? A. He is in the State of Washington.

100 Q. 4. Now, please state somewhat fully the circumstances under which the parent application was prepared by you?

Question objected to by counsel for defendant as incompetent, irrelevant and immaterial, as it is not apparent what bearing the circumstances attend*ed* upon the preparation of the cases have upon the questions in issue.

By Mr. DUELL: Such bearing will fully appear.

A. Mr. Charles H. J. Dilg, son of Christian F. Dilg, came to me in the early fall of 1897 and showed me a number of ball retainers of different constructions, together with some drawings of other constructions, and asked me to prepare an application for patent for a ball bearing, which application should embody the various constructions shown and explained to me at that time. He stated that great haste was desirable, and in fact necessary, in the matter of the preparation of this application, for the reason that they were manufacturing several styles of these ball retainers, and that he had reason to believe that a workman in his father's employ, in fact I understood him to say the foreman, one Herman Hansen, had made an application for patent, unbeknown to his employer, on one of the said structures which had been invented by said Christian F. Dilg and was being manufactured at said Dilg's factory where Mr. Hansen was or had been employed during the time said articles were being produced. I accordingly instructed my draftsman to show the various styles of structures disclosed in the drawing marked Exhibit F. With regard to the various figures of the drawing particularly concerned in this cause, I instructed the said draftsman, one Richard I. Elliott, to show a ball retainer consisting of a flat ring base having at intervals along the outer edge a series of practically vertical standards or flaps terminating in practically horizontal extensions, the side edges of such extensions being shown as converging as they approached the center or axis of the ring base.

I also asked him to illustrate in the drawing the fact that the
101 adjacent sides or edges of each pair of adjacent horizontal portions of the standards or flaps, which I designate as extensions, also converged or approached each other as they approached toward the center of the ring base. I also instructed him to show a series of flaps or standards ranged along the inner edge of the ring and located opposite the first named series of standards and bent up at an angle from the base so as to contact or lie adjacent to the inner ends of the said extensions. He accordingly made a drawing for me, and we went over the figures 2 and 3 of the same and satisfied ourselves that the said figures were made according to the instructions given him and to the models he had from which he made the said figures.

Recess.

Answer to Q. 4 resumed:

In drawing up the specification I first stated broadly that the invention related to ball bearings wherein a holder is used having a series of ball-bearing points to retain the balls. I afterward proceeded to describe the particular ball retainer shown in figures 1, 2 and 3 of the drawings, stating that the device was one "consisting ordinarily of a * * * ring having a series of inner and outer bearing points or detents," referring to the inner and outer standards or flaps A' A^3 which are described as being practically vertical. The said standards or flaps are also described as "also having a series of top plates A^2 practically parallel with the ring A;" and in the original divisional specification it was specified that either of said flaps or standards might have said preferably tapering extension or top

portion or plate A^2. I then proceeded to describe the group of ball-holding devices shown in figures 4 to 7, and as the adjacent edges of adjacent top parts or extensions A^2 were shown in the illustrations of the device previously described as converging or drawing nearer together as they approached th [illegible] center of the ring, I
102 specifically stated that in the gro [illegible] of structures now being
described, the top edges forming [illegible] boundaries of the ball pockets did not converge or approach ea [illegible] her as they drew near the centre of the ring, saying, "In this in [illegible] the edges of the top plates A^{12} are parallel with each other." [illegible] it seemed to me apparent that anyone familiar with the art [illegible] observe that the inner and extreme portions of the edges o [illegible] adjacent parts A^2 which converged as described, and the in [illegible] of standards or flaps performed the same function, I inti [illegible] at one of them might be dispensed with in the statement:

"It is manifest that various omissions of [illegible] ulars could be made without materially affecting the esse [illegible] s of my invention or the operation of the remaining pa [illegible]

In describing the operation of the device [illegible] d attention to the function of the said convergment of [illegible] the extensions A^2 by the statement:

"The side bearing points or detents, as state [illegible] the balls from rolling out of their sockets."

Q. 5. Referring to Complainant's Exhibit [illegible] ngs relating to the parent application, please state wh [illegible] nstruction therein illustrated was that which was at th [illegible] pared the application considered the form most v [illegible] ially speaking; in other words, what construction, [illegible] told to protect the most specifically? A. I can't [illegible] ving anything told me by Mr. Dilg as to which [illegible] ner shown me by him was most valuable comme [illegible] the claims were concerned, the structure claimed m [illegible] hat shown in figures 4 and 5, but as a matter of fa [illegible] ch attention as to the drawing of the claims, as I k [illegible] ns
could be substituted at any time. My [illegible] s
103 to get a drawing and description of the [illegible]
as soon as possible, in accordance with [illegible] r. Dilg.

Q. 6. And figure 4 of Complainant's Exhibit F [illegible] jacent edges at the upper sides of the pockets? A. [illegible]

Q. 7. Now I believe you stated that Mr. Dilg bro [illegible] models or sketches of ball retainers. Please state w [illegible] bodied views of all such structures in the drawing, [illegible] merely disclosed what you or Mr. Dilg and you con [illegible] important ones?

Question objected to by counsel for defendan [illegible] nt, irrelevant and immaterial, in that the proceedings [illegible] lling of the application have no bearing upon the que [illegible] atter here in issue.

A. Mr. Dilg brought down quite a number [illegible] d drawings showing different methods of making ball retainers, and as it was impracticable to incorporate all of them into the application, I selected the more important or typical forms of ball retainers. In fact, there was one element in this ball retainer (*i. e.*, the one shown in figures 1, 2, and 3), that I omitted to show and describe, which was afterwards submitted by amendment to the Patent Office.

Q. 8. You stated that the parent application was hastily prepared in view of the statement that one Herman Hansen, Mr. Dilg's foreman, had filed an application for the same invention or, more specifically, that disclosed in figures 1, 2, and 3, of Complainant's Exhibit F. Was an interference declared with Hansen, and if so, what was the outcome? A. An interference was declared between the divisional application of Christian F. Dilg with a patent that had been issued to Herman Hansen on March 8, 1898, and another interference was declared between the same application of Christian F. Dilg and a patent dated November 30, 1897, on an application purporting to have been filed by C. H. J. Dilg. Both of these
104 interferences terminated in favor of Christian F. Dilg upon concessions of priority of invention made by said Herman Hansen and C. H. J. Dilg.

It is agreed that copies of Patent Office records need not be offered in evidence in corroboration of the foregoing.

Q. 9. Now please state when you first learned of the existence of the patent to Keiper, a copy of which has been offered in evidence as Complainant's Exhibit D? A. I first heard about the Keiper patent in the early part of the year 1903, probably in April or May.

Q. 10. Did you disclose this knowledge to either of the Messrs. Dilg to whom you have referred? A. I had a conference with Mr. C. H. J. Dilg very shortly after I heard of the existence of the Keiper Patent.

Q. 11. Why didn't you at that time insert the claims which have been spread upon the record in this cause as 14, 15 and 16, and which are involved in this suit, at that time, which I understand was slightly before the declaration of an interference between the divisional application of Christian F. Dilg and the patent to Herman Hansen referred to? A. I had made an appeal to the Board of Examiners in Chief on October 10, 1901, which was a little over a month before the issue of the Keiper Patent, for the purpose of obtaining some claims which I thought Mr. Dilg was entitled to, it being of course necessary to get the application in shape for issue before interferences could be declared with the Hansen and C. H. J. Dilg Patents. The matter was referred back by the Board of Examiners in Chief to the Primary Examiner for the consideration of a question of new matter involved in present allowed claims 1 and 2, the said alleged new matter being as to the snapping of the balls in and out of the retainer, The Primary Examiner concurred in the action of the Board and rejected the claims in controversy,
105 and an appeal was taken to the Commissioner of Patents in person on May 20, 1902. The decision of the Commissioner of Patents did not reach us for several months, I think five or six

months, and the said decision being in favor of Christian F. Dilg, proceedings were taken immediately thereafter to have the interference declared between the Dilg application and the patents issued to Herman Hansen and C. H. J. Dilg, which interferences, as stated, were declared on June 9, 1903, and terminated September 2, 1903. The claims at issue, being claims numbered 14, 15 and 16, were filed on September 1, 1903, at the termination of the said interferences, which was the earliest practicable moment they could be presented to the Patent Office for action.

Q. 12. When did these interferences terminate to which you refer, which termination you state left you free to take up the matter of an interference with the patent to Keiper, a copy of which is of record as Complainant's Exhibit D? A. Judgments of priority of invention were rendered in favor of Christian F. Dilg in both of the said interferences on September 2, 1903, and the claims 14, 15 and 16 were filed on September 1, 1903, in view of the fact that I knew concessions of priority of invention had been filed by Herman Hansen and C. H. J. Dilg.

Q. 13. Referring to claims 14, 15 and 16 involved herein, please state your understanding of the scope or application of the adverb "only" appearing therein?

Question objected to by counsel for defendant as irrelevant, incompetent and immaterial, as involving the meaning of ordinary language upon which the opinion of the witness is not of consequence. The question is further objected to for the reason that it does not appear that this witness is specially qualified to testify upon the meaning of language.

106 A. My understanding of the claims at issue, for example claim 14, is that it calls for a ring-shaped portion or base having a series—*i. e.,* a row or continued succession of articles—springing from one edge thereof only, which row or series of standards are of a particular type or formation, namely, they must be provided with sector-shaped or flaring angularly arranged extensions. I see no reference in this claim to any limitation as regards the other edge or the ring, that is, whether or not the other edge of the ring may be provided with any ball-retaining means.

Q. 14. Then the particular series of standards defined in the claims referred to, could not be an alternative series or a series alternatively connected to opposite edges of the ring-shaped base, that is, spring from two edges instead of one edge only. Is my understanding of your viewpoint correct?

Same objection.

A. The particular series of standards defined in the claims referred to could not be an alternative series or a series alternately connected to the opposite edges of the ring-shaped base, for the reason that the claims state that the standards of this particular type must spring from one edge only of the ring, but standards of other formation may be used in connection with the other edge of the ring if desired, as the claims are entirely silent as to what devices, if any, are located at the edge of the ring opposite to which the particular type of standards named are placed.

Cross-examination by Mr. BAYARD:

X Q. 15. The subject-matter of each of the interferences to which you refer in your testimony in chief is a ball retainer with standards projecting from both edges of the ring-shaped base thereof, is it not? A. Yes, naturally, for a certain person had taken Mr. Dilg's 107 foreman away from him and induced the said foreman to make an application for patent for the subject-matter involved in the Hansen interference, and the said articles were being sold on the market.

X Q. 16. Each of the claims involved in said interference positively included standards rising from each edge of the ring-shaped base of the retainer, did it not? A. Yes.

Cross-examination closed.
Deposition closed.
(Sgd.) J. ODELL FOWLER.

CHARLES H. J. DILG, a witness produced on behalf of complainant, having been first duly sworn and cautioned, in answer to interrogatories propounded by counsel, testifies as follows:

Q. 1. Please state your name, age, residence and occupation? A. Charles H. J. Dilg; 40; 1045 Clay Avenue, Bronx; mechanical engineer.

Q. 2. I believe your father is the inventor of the application involved herein? A. Yes, sir.

Q. 3. How old a man is he, and in what condition of health? I wish to bring out the reason for not producing him as a witness, in so far as any reason might be said to be necessary. A. He is 75 years old and not of particularly robust health, being especially weak on his limbs.

Q. 4. Which is the more important style of ball retainer, commercially speaking, of those illustrated in the drawings in evidence in this cause? A. I produce a sample in which the standards having the sector-shaped extensions rise from the outer edge.

108 Counsel for complainant offers in evidence the sample produced by the witness, and the same is received and marked "Complainant's Exhibit K, Commercial Sample of Dilg Retainer."

Counsel for defendant objects to the admission of the exhibit in so far as the same may be made the basis of any attempt to show that the invention is in any respect otherwise than shown by the specifications and drawings originally filed.

By Mr. DUELL: No such attempt is contemplated, or desired, or necessary.

Q. 5. If ball retainers like Exhibit K have been manufactured, please state when such manufacture began and by whom? A. As near as I can remember without trying to be exact, the actual manufacturer of these retainers commenced some time in February, 1897, by Christian F. Dilg, my father. Thousands of these retainers were made during the following six months, when the party for whom we had manufactured them, namely, G. E. Strauss, appropriated the invention to his own use and started to manufacture them himself, such manufacture, as I am informed, having continued until the present day.

Q. 6. Please state whether or not the business of manufacturing and selling ball retainers is done upon a close margin of profit or a relatively broad margin of profit? A. At the time when we manufactured them, it was desirable to make the cost as low as possible, and today, with greatly decreased cost of the steel balls, this is evidently a still greater consideration.

Q. 7. Then as I understand you, the margin of profit in the ball retainer business at the time when you were actively engaged therein was very small, so that anything which conduced to a saving in manufacturing became relatively important? A. Yes.

109 Q. 8. Now please state why the form of ball retainer disclosed by Complainant's Exhibit K, Commercial Sample, &c., having a series of inner auxiliary retaining posts was manufactured rather than a form omitting such inner series? A. When the retainers are manufactured of comparatively heavy material so as to be extremely stiff and not easily bent, then the construction can be made so as to obviate the presence of the inner series, but when it is desired to make the retainer of very light metal, in which case it is subject to distortion, then the auxiliary or inner series of standards or rim is very helpful toward keeping the balls in place in all directions.

Q. 9. Which is the cheaper to make; ball retainers of heavy metal or ball retainers of light metal, and why? A. Naturally of light metal, so long as it performs its function, for various reasons; firstly, the expense for the material is less; secondly, lighter machinery, such as presses, can be used; thirdly, the wear on the dies required in producing the blanks and forming them up is less than when heavy metal is used. In addition to this, there is the consideration of the weight of the retainer in the bearing, and also the factor of being able to insert or extract the ball into or from the retainer with little effort.

Q. 10. Then it is important to have a retainer which will admit of inserting the ball or removing the same therefrom without appreciable effort? A. That is decidedly preferable.

Q. 11. Please produce, if you have one, a sample of ball retainer made like that of the Keiper Patent? A. I have one, and produce it. While this looks like a Keiper retainer or one made in accordance with the Keiper patent, the angularly arranged extensions do not extend as far outwardly over the base as is shown in the patent.

Counsel for complainant offers in evidence the sample produced by the witness, and the same is received and marked "Complainant's Exhibit L, Keiper Retainer."

110 Counsel for defendant objects to questions 5 to 11 inclusive and their answers, and the Exhibit K, as irrelevant.

Q. 12. From which edge of the ring-shaped base of ball retainers of the type shown by Exhibits K and L is it preferable to have the standards spring which are characterized by "top portions," and why? A. From the outer edge, for two reasons: firstly, it would be impossible to manufacture economically a retainer of small size with such standards springing from the inner edge, because each standard must be of sufficient length to be bent upwardly and outwardly, and it can readily be seen that if the diameter of the ring base be small, there would not be material within the ring from which to make the standards; secondly, the question of tools necessary to make either kind of retainer is in favor of that construction which has the standards springing from the outer edge. It is evident that it is preferable, in making a certain line of retainers, to follow the same pattern, and therefore when it is considered that it is impossible to make small retainers with standards rising from the inner edge and provided with the extensions named, then the choice must naturally fall to the kind which has the standards with the extensions on the outer edge of the ring-shaped base.

By Mr. BAYARD: Objected to as irrelevant.

Q. 13. Who gave the information to Mr. Fowler, the patent solicitor, as to the invention involved herein?

Same objection.

A. It was I exclusively.

Q. 14. When did you first learn of the Keiper patent, Exhibit D? A. As near as I can recollect, it was sometime during the summer of 1903.

111 Q. 15. I show you "Complainant's Exhibit J, Enlarged View of Original Figure 3." What is the relation of the size of the ball there shown to the retainer, and what should the relation be in a practical commercial structure?

Objected to by counsel for defendant as manifestly incompetent, irrelevant and immaterial, since complainant is not at liberty to depart from his original disclosure in amending his application even though the facts in practice were different from what is therein set forth.

A. The ball is proportionately too small and should be shown as projecting at least one-fifth or one-fourth its own diameter above the top portions or extensions as it actually existed in one of the retainers which were manufactured at the time and which I brought to Mr. Fowler among other samples from which to make the drawing and write the specification. As a result of the deficient size of the ball B shown in figure 3 of the original drawing, it might appear as though the same could roll from its pocket in the inward direction; but if the ball be of proper size, this of course cannot occur. In addition, I might say that if the inner series of standards are present, then a slightly smaller ball would still be held in place and prevented from escaping.

Q. 16. Is a ball retainer which prevents the balls from escaping in three main directions and not in the fourth, of any practical use, and why? A. It certainly is, because it would entirely fulfill one of its objects, namely, that of being able to introduce the balls into the bearing and prevent them from being spilled therefrom while the bearing is being assembled.

Cross-examination waived.

Deposition closed.

(Sgd.) CHARLES H. J. DILG.

Adjourned subject to notice of further testimony or to notice of closing *prima facie* proofs.

112 NEW YORK, N. Y., *December* 29, 1906.

Met pursuant to agreement.

Present, same as before.

It is mutually agreed and understood by counsel for the respective parties hereto that no contention is made that the claims in issue are not patentable.

It is stipulated that no references were cited by the Patent Office during the pendency of the application for Letters Patent resulting in Letters Patent No. 686,617, issued Nov. 12, 1901, to H. B. Keiper for Improvements in Ball Retainers.

Prima facie proofs closed.

BY COUNSEL FOR DEFENDANT: Defendant will stand upon the record, without taking proofs.

BY COUNSEL FOR COMPLAINANT: The Examiner is requested to note the closing of proofs on behalf of both parties hereto.

So noted.

113 In the Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG, Complainant,
v.
FREDERICK I. ALLEN, Commissioner of Patents, Defendant.

Notice is hereby given that certified copies of the following patents will be offered to the court at the hearing in this case and referred to in the brief and argument.

No. 466,443, January 5, 1892, Simonds.
No. 521,399, June 12, 1894, Wogan.
No. 559,537, May 5, 1896, Pierce.
No. 576,500, February 2, 1897, Strauss.
No. 611,689, October 4, 1898, Klahn.

No. 624,219, May 2, 1899, Klahn.
No. 686,617, November 12, 1901, Keiper.
No. 799,008, September 5, 1905, Klahn.

FAIRFAX BAYARD,
Counsel for the Defendant.

December 15, 1906.

Receipt of the above notice is acknowledged, and it is agreed in response to the request of counsel for the defendant that said notice with the acknowledgment and agreement may be incorporated in the record in this case.

WARFIELD & DUELL,
Counsel for the Complainant.

December 26, 1906.

(Here follow drawings marked pages 114, 115, 116, 117, and 118.)

Supreme Court of the District of Columbia.

Christian F. Dilz
vs.
Frederick I. Allen as
Commissioner of Patents

In Equity
No. 26,013.

"Complainant's Exhibit B.
Sheet of drawings filed with
Original Divisional
Specification
H. M. S.
Oct. 23, 1906 Notary Public

Fig. 1.

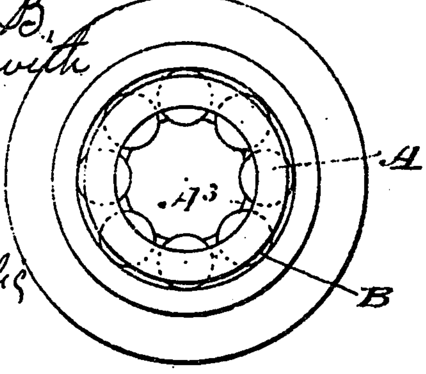


Fig. 2.

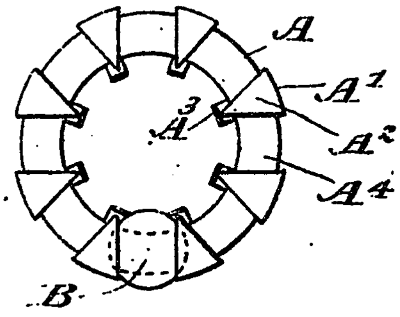


Fig. 3.

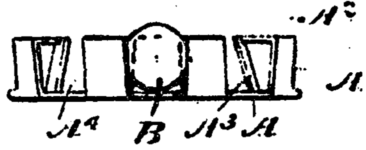


Fig. 4.

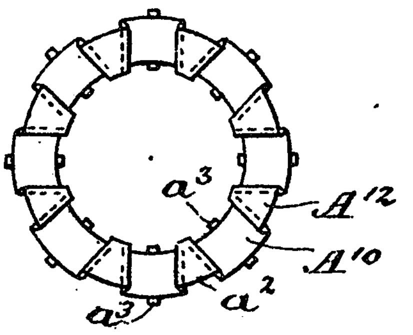


Fig. 5.

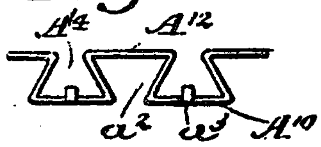


Fig. 6.

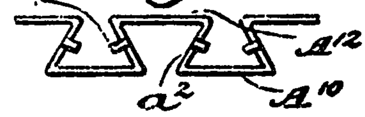


Fig. 7.

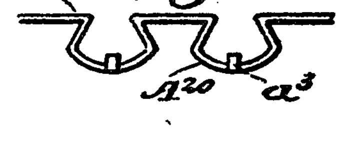


Fig. 8.

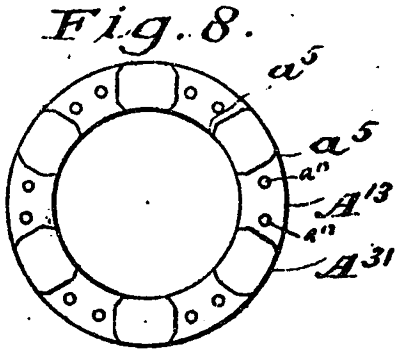
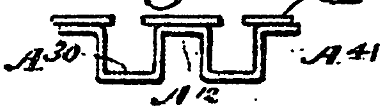


Fig. 9.



Witnesses:

E. B. Bolton

Jos. C. Blanch

Inventor:

Christian F. Dilz

By J. O. Fowler Jr.

his Attorney.

Mar. 17, 1900 Rej
June 26, 1900 Letter.
Apr. 11, 1900 [illegible]

~~Jan. 26, 1901~~
~~Feb. 5, 1901~~ - [illegible]
~~Jan. 27, 1902~~
~~Apr. 5 1905~~ Letter

Supreme Court of the District of Columbia.

Christian F. Dilg
vs.
Frederick I. Allen, as
Commissioner of Patents

In Equity
No. 26,013.

"Complainant's Exhibit C,
Additional Sheet of Drawings filed
with Amended Divisional
Specification.
H. M. E.
Notary Public
Oct. 23, 1906.

Fig. 10.

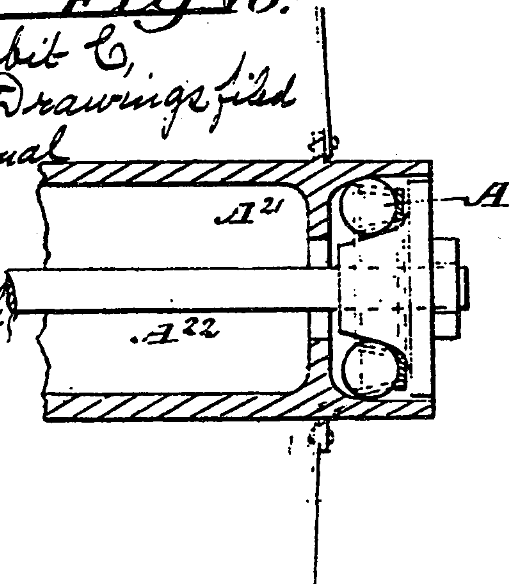


Fig. 11.

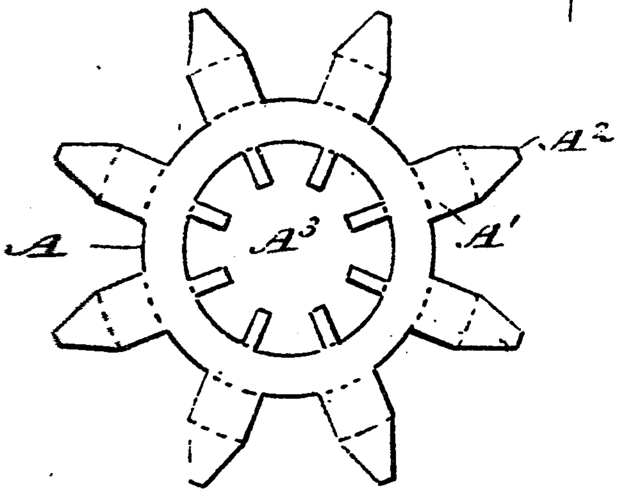
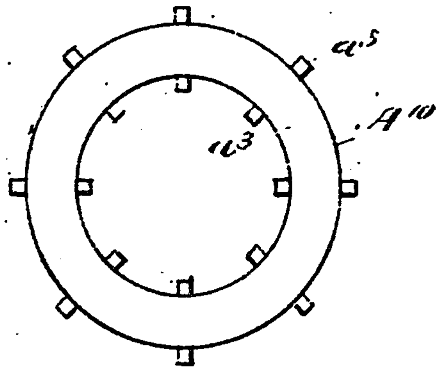


Fig. 12.



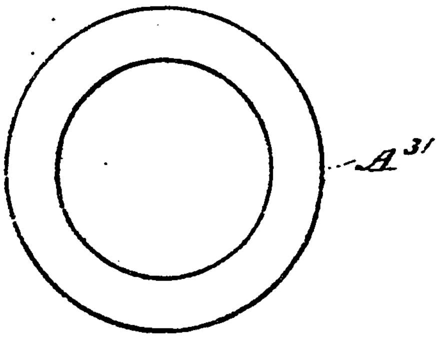


Fig. 13.

Witnesses:
E. B. Bolton
A. S. Morris

Inventor:
C. F. Dilg
By J. O. Fowler Jr.
His Attorney

Supreme Court, District of Columbia

original drawing

Christian F. Dilg
Complainant

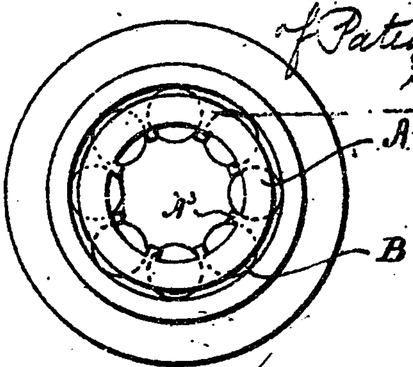
vs.

F. I. Allen, as Commissioner of Patents
Defendant

In Equity
No. 6013

Complainant's Exhibit
Drawing in Parent Application
H. W. S.
Notary Public

Fig. 1.



Cancelled for division 5,434

Fig. 2.

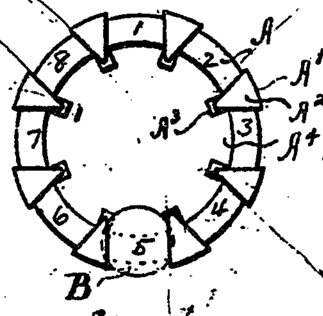
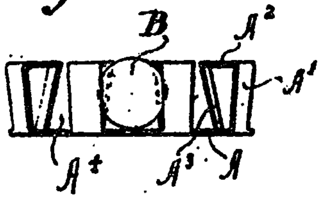


Fig. 3.



Canceled Aug. 7

Retained in original case 655,652-

Fig. ~~A~~ 1-

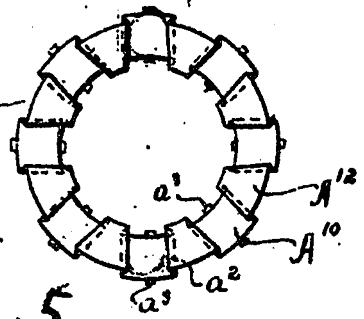


Fig. 2-

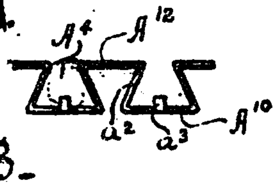


Fig. 3-

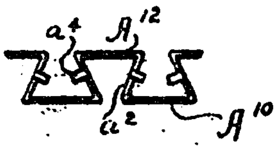


Fig. 4-

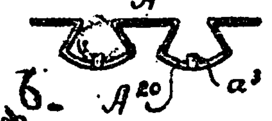


Fig. 5-

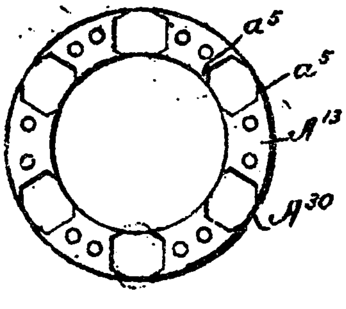
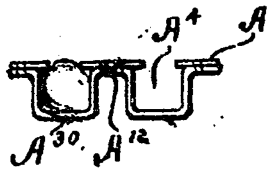


Fig. 6-



Witnesses
Richard I. Elliott
M. Macfarlane

Christian Dilg Inventor
By his Attorney J. O. Fowler, Jr.

Nov. 27, 1897 - Letter.
Jan. 11, 1899 - Letter.
Jan. 12, 1900
Feb. 19, 1900 - Letter

March 17, 1900 - Letter
July 14, 1900
Aug. 4, 1900 - Letter.
Sept. 24, 1900 - Letter.

Supreme Court of the District of Columbia

Christian F. Dilg,

vs.

Frederick I. Allen, as

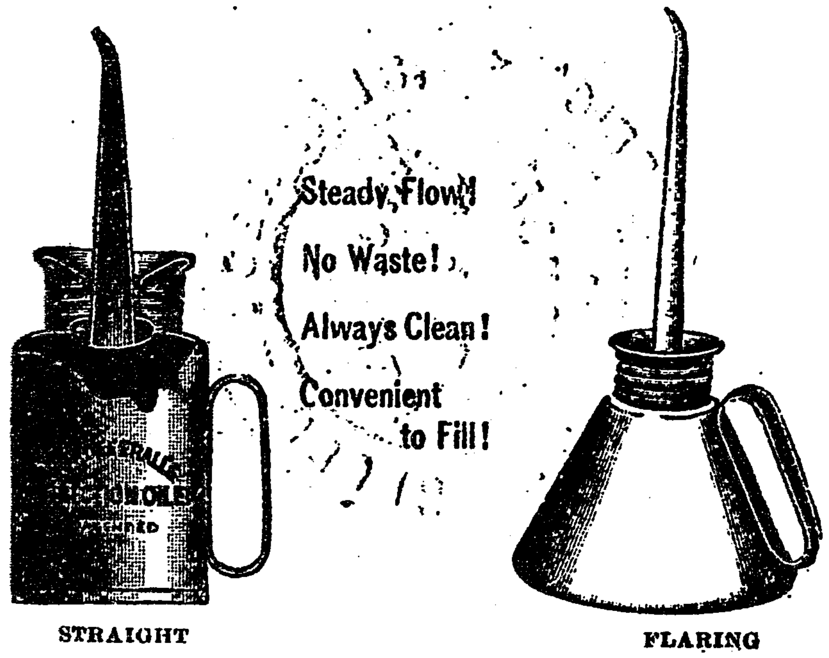
Commissioner of Patents

"Complainant's Exhibit H, Illustration of Flaring Oiler".

H. M. S.
Notary Public

Oct. 24, 1906.

Straight and Flaring Engine Oilers


Steady Flow!
No Waste!
Always Clean!
Convenient to Fill!

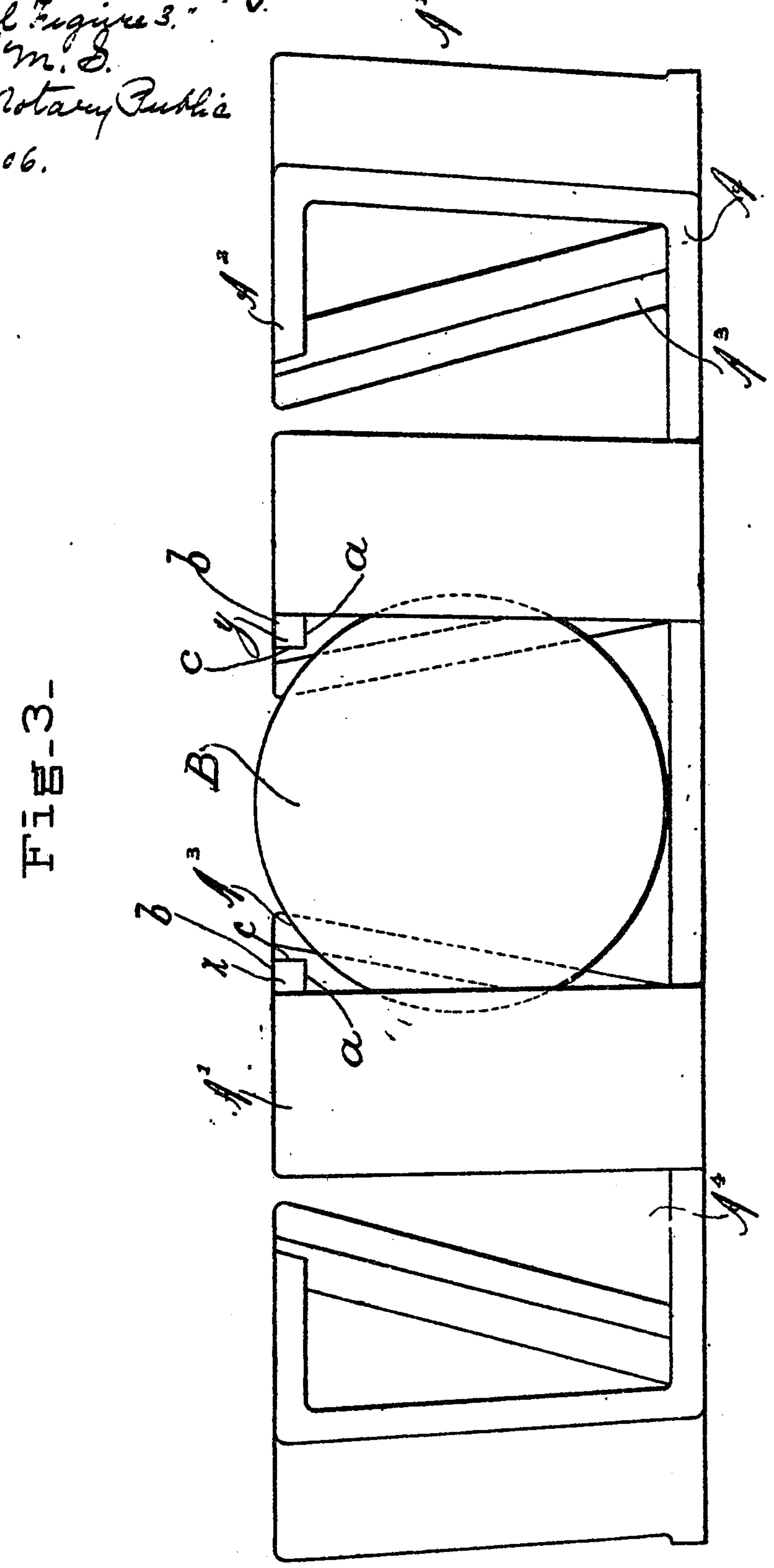
STRAIGHT FLARING

Supreme Court of the District of Columbia.

Christian F. Dilg
vs.
Frederick I. Allen, as
Commissioner of Patents.

In Equity.
No. 26,013.

"Complainants Exhibit J, enlarged view
of Original Figure 3."
H. M. S.
Notary Public
Oct. 25, 1906.



WITNESSES
Norris Perry

INVENTOR

BY

ATTORNEYS

No. 686,617. **Patented Nov. 12, 1901.**

H. B. KEIPER.

BALL RETAINER.

(Application filed Dec. 23, 1897.)

(Model.)

Fig. 1.

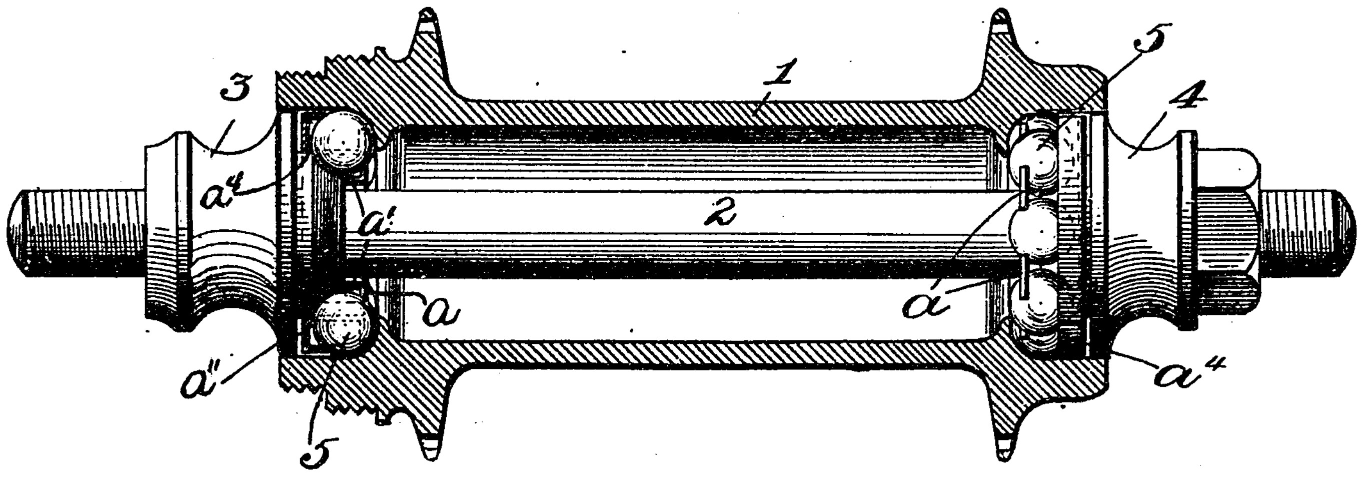


Fig. 2.

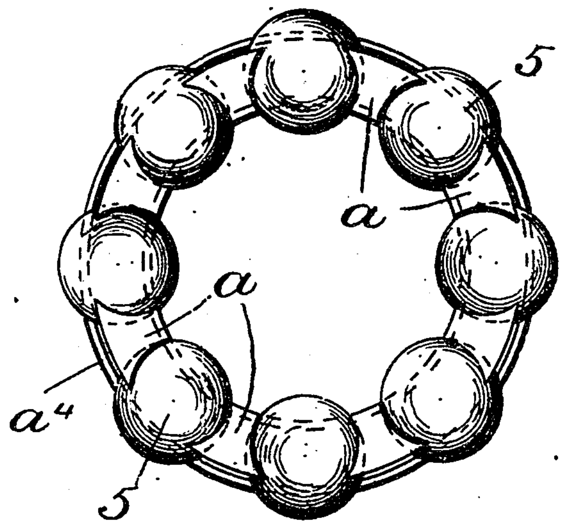


Fig. 3

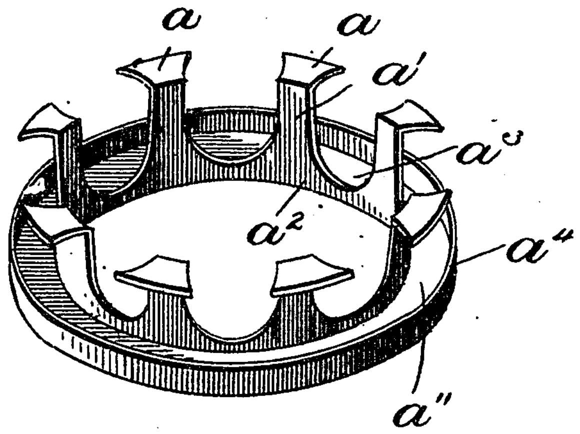


Fig. 4.

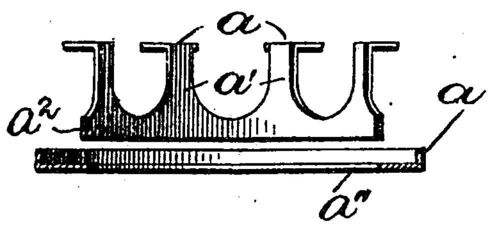


Fig. 5.

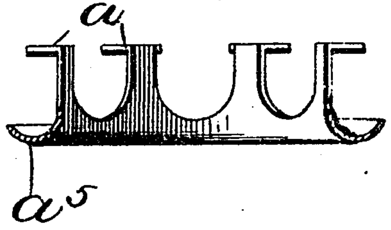
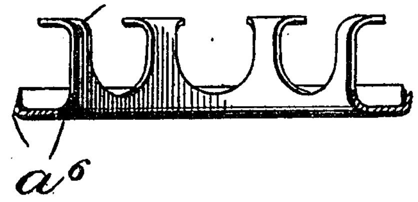


Fig. 6.



Witnesses

Edw. O. Duvall, Jr.

Chas. E. Riordan

Inventor

Henry B. Keiper

By Julian C. Dowell

His Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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UNITED STATES PATENT OFFICE.

HENRY B. KEIPER, OF LANCASTER, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STAR BALL RETAINER COMPANY, OF LANCASTER, PENNSYLVANIA, AND JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

BALL-RETAINER.

SPECIFICATION forming part of Letters Patent No. 686,617, dated November 12, 1901.

Application filed December 23, 1897. Serial No. 663,184. (Model.)

To all whom it may concern:

Be it known that I, HENRY B. KEIPER, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Ball-Retainers for Antifriction-Bearings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in an independent ball-retainer to be used in antifriction-bearings, and it may be considered as closely analogous to the invention described and claimed in my application for Letters Patent filed October 9, 1897, Serial No. 654,649, (now Patent No. 604,678, dated May 24, 1898,) performing its functions in the same manner, moving with the balls and keeping them from rubbing against each other, reducing friction to a minimum, the construction being very compact and yet yielding additional strength.

The elements of the invention will severally and at large appear in the following description, and they will be separately and collectively set forth in the claims.

The purposes of the invention are attained by the mechanism and devices illustrated in the accompanying drawings, wherein similar reference characters are used to designate like parts throughout the several views, in which—

Figure 1 is a central longitudinal sectional elevation of a bicycle driving-wheel hub, showing in position in the ends thereof ball-retainers embodying the invention. Fig. 2 represents in plan one of the ball-retainers detached and with balls therein. Fig. 3 represents the retainer in perspective without the balls. Figs. 4, 5, and 6 represent different forms of the retainer in cross-section.

In the drawings, 1 designates an ordinary bicycle driving-wheel hub; 2, a central shaft or bolt well known to the trade; 3 and 4, the usual cones screwed onto said shaft or bolt, while 5 designates the balls, rolling in the usual races.

As shown in the drawings, the retainer is made in part from a tube having at one end an outwardly-projecting ring-flange. Circular cuts through said flange and extending downwardly through the tube to prescribed points from the other end thereof leave practically sectoral portions a of the flange and columns or standards a' of the tube, with an intact end a^2, the cuts forming practically U-shaped recesses or spaces a^3 of less width than the diameters of the balls to be seated therein. Onto the intact end a^2 of the tube in that form of the device shown in Fig. 4 is sleeved a circular ring-plate a'', forming an annular base portion and having at its outer edge or margin an upwardly-turned rib or ring-wall a^4, having a prescribed height, and the upper edge of which contacts with the convex faces of the seated balls below their centers, the side edges of the sectoral portions a contacting with said faces above said centers, and after balls are seated in said recesses said ring-plate may be rigidly affixed to said tube end, as by brazing or riveting; but preferably the balls are inserted after the retainer is complete by forcing them into place past the points of the sectoral portions, which yield sufficiently for this purpose and snap back into place to confine the balls.

When so desired, the retainer may be made in one piece, as by casting or pressing, the recesses being punched, and the edges may be rounded, as shown at a^5 in Fig. 5 and at a^6 a^7 in Fig. 6, all without changing the character or departing from the spirit of the invention.

It will here be observed that the number of balls is not restricted, but is determined by the size of the bearings and the diameters of the balls it is desired to use; that the number of recesses a^3 in the retainer is determined by the said number of balls, and they may be any desired distance apart; but the columns or standards between them should always be sufficiently wide to prevent the balls from rubbing against each other; that the balls should be loosely seated in said recesses, which should be sufficiently large and so shaped as to present the least number of possible points of contact, and that the upper edge of the rib a^4 should bear such relation to the outer edges of the flange-sectors a as to prevent the seated balls from falling out of the recesses in this direction; that when the balls are seated in the recesses, as shown, their surfaces cannot contact with or rub against the face of the ring-plate a'', and when the retainer occupies the positions indicated said balls will revolve or roll between the central cone and outer ball-race in the usual manner without rubbing against each other, thereby avoiding the usual sliding or opposing friction; that the retainer carrying the balls, as shown, moves with said balls as they perform their functions, reducing all friction to a minimum, and when a bearing is taken apart for any purpose whatever the retainer can be readily removed or again put in place, the balls remaining in order or in normal positions.

In the preferred form of my invention the ball-retaining device consists of a ring-shaped portion or base constructed integrally with a series of standards rising or springing from its inner edge in the plane of the axis of the ring and terminating in flaring or sector-shaped flanges, which are arranged substantially at right angles to the standards proper and overlie or extend transversely of said ring, the latter having its outer edge upturned, so that the balls may be sprung into the spaces formed for receiving and confining them between adjacent standards and be held in such spaces by contact with said upturned edge and outturned flanges when the retainer is removed from the ball race or bearing; but the angularly-arranged flanges need not necessarily extend at right angles to the standards proper, nor is it necessary that the latter should stand perpendicular to the base, as it may be practicable in some cases to slightly curve or vary the form of the standards and their flanges (otherwise termed "flaps" and "extensions," respectively) and also the form of the ring-shaped portion or base without departing from the spirit of my invention.

Having now described the invention and ascertained and shown the manner in which it is to be performed, what I consider new, and desire to secure by Letters Patent, is—

1. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

2. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

3. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

4. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing from its inner edge only and terminating in outwardly-turned sector-shaped or flaring extensions or flanges, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

5. A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base having flaps with extensions which are laterally enlarged to produce pointed ends, the flaps being upwardly and the extensions outwardly bent, in combination with balls held on the base in the spaces created by said flaps and their extensions, substantially as set forth.

6. A ball-retainer for antifriction-bearings the same comprising an annular base portion or ring with an upturned outer edge, a circular series of standards springing from the inner edge of said ring and separated by openings of less width than the balls to be retained, and flanges of substantially sectoral form at the ends of the standards projecting outwardly over the base-ring so as to combine with the upturned edge of the latter in retaining the balls.

7. A ball-retainer for antifriction-bearings comprising a central tubular portion cut out at intervals forming U-shaped spaces with intervening standards, outward-projecting sectoral flanges on the latter, and a flange on the intact end of the tube with a marginal rib which combines with the edge of the sectoral flanges in confining the balls.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY B. KEIPER.

Witnesses:
HARVEY B. LUTZ,
NANCY I. KEIPER.

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No. 624,219. **Patented May 2, 1899.**

E. KLAHN.

BALL BEARING.

(Application filed Aug. 22, 1898.)

(No Model.)

FIG. 1.

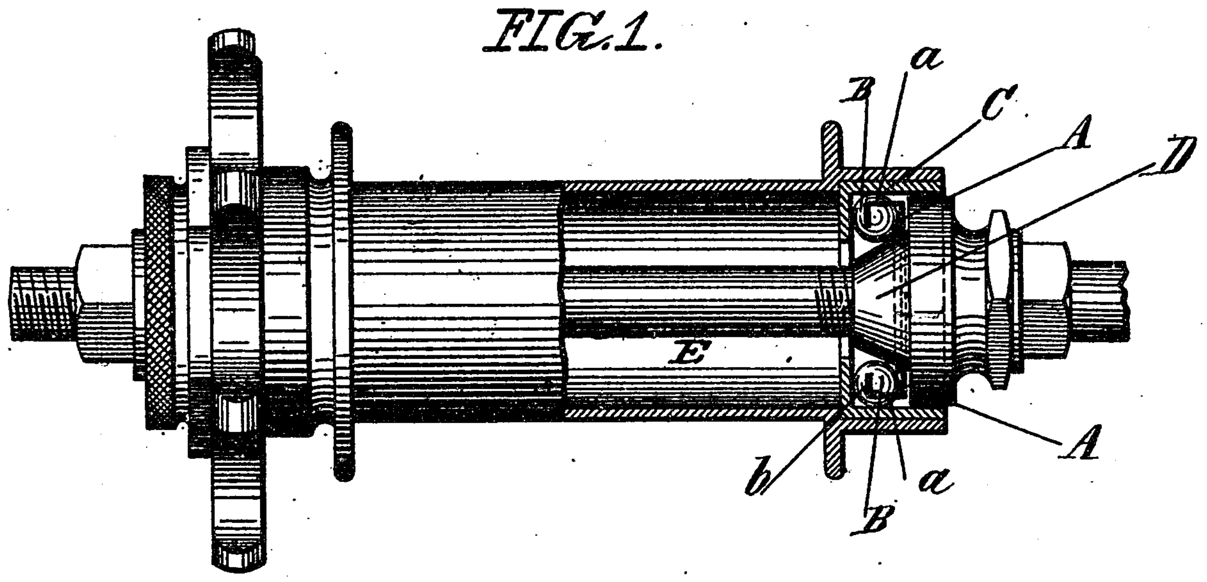


FIG. 2.

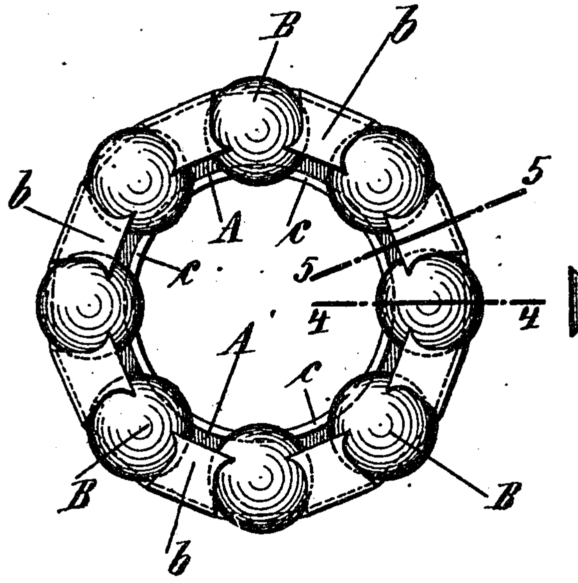


FIG. 3.

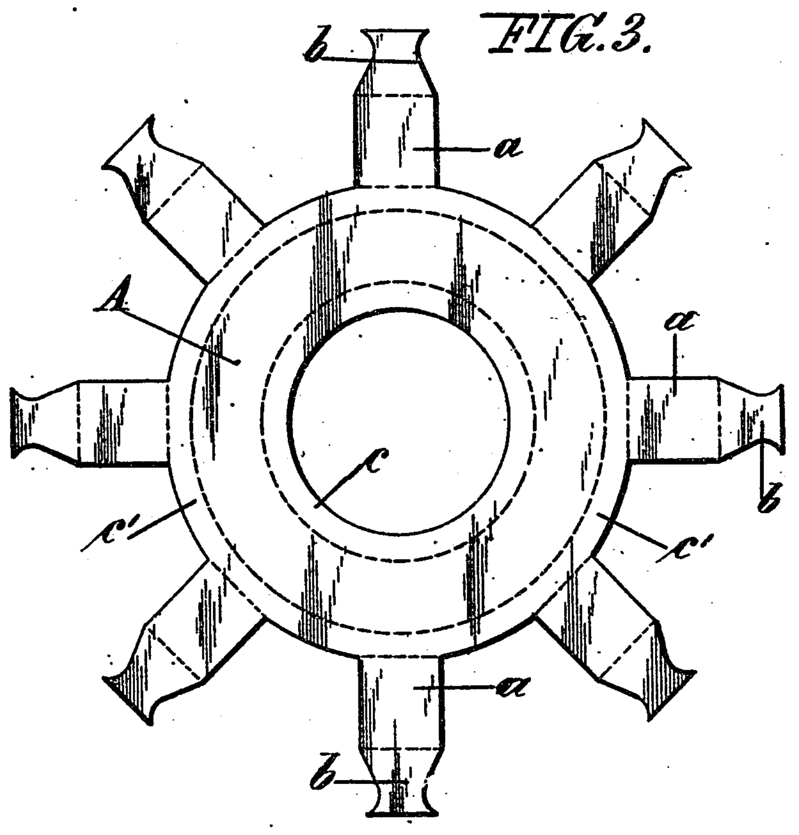


FIG. 4.

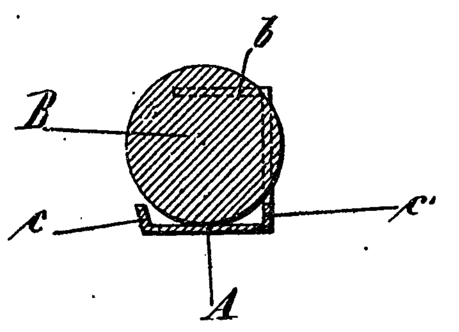
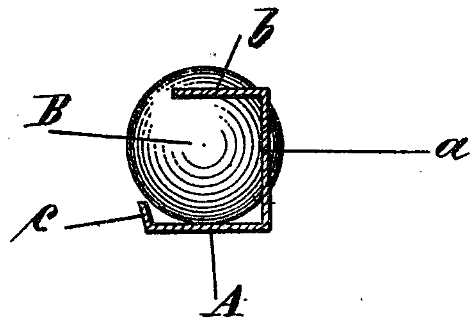


FIG. 5.



WITNESSES:

Bruno von Bültzingslöwen
Carl Eberhard

INVENTOR

Emil Klahn.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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from the original bound volume

UNITED STATES PATENT OFFICE.

EMIL KLAHN, OF WEST HOBOKEN, NEW JERSEY.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 624,219, dated May 2, 1899.

Application filed August 22, 1898. Serial No. 689,216. (No model.)

To all whom it may concern:

Be it known that I, EMIL KLAHN, a citizen of the United States, and a resident of West Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Ball-Bearings, of which the following is a specification.

My invention has reference to improvements in ball-retaining devices for ball-bearings, and has for its purpose to provide a device by which the balls in the bearings are kept separate from each other and the friction therein is prevented. These objects are obtained by the construction shown in the accompanying drawings, in which—

Figure 1 represents a hub, partly in section, showing the manner in which the ball-retaining devices are applied. Fig. 2 shows a top view of the device. Fig. 3 is a blank of which the said device is made. Fig. 4 is a section on line 4 4 of Fig. 2, and Fig. 5 is a section on line 5 5 of Fig. 2.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a flat ring-shaped base, of sheet metal, which on its outer and inner boundaries is provided with rims c' and c, both extending outwardly in the same direction. The outer rim c' has a series of flaps a, radiating from the center of the ring-base and bent in line with the rim. These flaps terminate in extensions b, the lateral edges of which are concavely cut out, so that sharp points on the end portion of the extensions, as well as on the points of connection of the flaps and the extensions, are produced. The extensions b are bent inward above the ring-base, so that the flaps a on the rim c' stand in a right or nearly right angle and the extensions b are in a parallel or nearly parallel position to the base.

The balls B are placed upon the ring-shaped base into the spaces which are created by the flaps and extensions bent in the described manner and are held in place between the rims of the base by the lateral edges of the flaps and the pointed end portions of the extensions, the concave lateral edges of the latter allowing the balls to revolve freely in the device. The balls cannot be removed from the device without bending the flaps and extensions to the outside. The rims of the ring-shaped base serve not alone to hold the balls in place, but also to impart to the base a greater rigidity.

The ball-retaining devices are applied to a ball-bearing in the following manner: The devices are placed into the cups C of the hub, and the cones D are then placed upon the ends of the shaft E, so that the devices are inclosed in the chambers created by the cups and cones, and the balls held in the devices come with their portions projecting beyond the retaining-flaps and extensions and the rims in close contact with the cups and cones of the bearing. The cones of the shaft can then freely rotate within the cups of the bearing or the cups around the cones, as the case may be.

It is a well-known fact that in the common ball-bearings friction is often caused by the circumstance that the balls are not precisely of the same diameter, whereby a sliding instead of a revolving motion of one or more balls is obtained, so that the bearings are worn out in a comparatively short time. Such friction cannot occur in ball-bearings with my improved ball-retaining devices, as those balls which are of too small a diameter will be carried along without causing any friction or other injury.

I am aware that ball-retaining devices consisting of ring-shaped bases with flaring and bent flaps are known, and I do not claim such devices broadly.

What I claim is—

1. A ball-retaining device for ball-bearings, consisting of a flat ring-shaped base having at its inner and outer boundaries rims projecting from the base outwardly in the same direction, the outer rim having a number of flaps extending at intervals in line with the rim, and of extensions flaring inwardly from the flaps in parallel position with the base and having their lateral edges concavely cut out, substantially as set forth.

2. The combination of a flat ring-shaped base having at its inner and outer boundaries

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rims projecting from the base outwardly in the same direction, a series of flaps extending at intervals from the outer rim in line with the same, and extensions flaring inwardly from the flaps in parallel position with the base and having their lateral edges cut out, with balls located on the flat base in the spaces created by the flaps and cut-out extensions, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 19th day of August, A. D. 1898.

EMIL KLAHN.

Witnesses:
G. E. STRAUSS,
B. S. AUGSBURGER.

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125 *Stipulation.*

Filed March 28, 1907.

In the Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG, Complainant,
vs.
FREDERICK I. ALLEN, as Commissioner of Patents, etc., Defendant.

It is hereby mutually stipulated and agreed, by and between solicitors and counsel for the respective parties hereto, that the annexed printed record, together with the exhibits referred to therein, constitutes the record in this cause and upon which they elect to try the same.

FAIRFAX BAYARD,
Solicitor and Counsel for Defendant.
WARFIELD & DUELL,
Solicitors and of Counsel for Complainant,
By H. S. DUELL,
Solicitor and of Counsel.

Washington, D. C., March 27, 1907.

126 *Order Substituting Edward B. Moore as Defendant.*

Filed June 14, 1907.

In the Supreme Court of the District of Columbia.

In Equity. No. 26013.

CHRISTIAN F. DILG, Complainant,
vs.
FREDERICK I. ALLEN, as Commissioner of Patents, etc., Defendant.

Whereas it appears that Frederick I. Allen has resigned the office of Commissioner of Patents of the United States, said resignation taking effect the first day of June, 1907; and

Whereas it appears that Edward B. Moore has been appointed and commissioned to succeed said Frederick I. Allen as Commissioner of Patents of the United States, and now occupies said office as Commissioner; and

Whereas the above entitled cause was instituted and has been brought to final hearing against said Frederick I. Allen in his official capacity as said Commissioner of Patents and is now awaiting decision:

Now, therefore, upon motion of Warfield & Duell, Solicitors and of Counsel for complainant, and upon the consent of said Edward B. Moore as Commissioner of Patents of the United States, it is, in accordance with the statutes of the United States in that respect made and provided,

127 Ordered that the above entitled cause be and the same hereby is revived and continued against said Edward B. Moore as Commissioner of Patents of the United States, party defendant, with the same force and effect as though said Frederick I. Allen still held said office of Commissioner of Patents.

ASHLEY M. GOULD,
U. S. Judge.

Dated Washington, D. C., June 14″ 1907.

Entry of the foregoing order is hereby consented to.

E. B. MOORE,
As Commissioner of Patents.

Washington, D. C., June 14″ 1907.

128 *Opinion.*

Filed January 28, 1909.

In the Supreme Court of the District of Columbia, Holding an Equity Court.

Equity. No. 26013.

Christian F. Dilg, Complainant,
vs.
Frederick I. Allen, as Commissioner of Patents of the United States, Defendant.

This is a bill in Equity filed under Section 4915 Revised Statutes of the United States to compel the Commissioner of Patents to issue Letters Patent to the plaintiff, Dilg. The section under which the suit is brought reads as follows:

"Whenever a patent on application is refused, either by the Commissioner of Patents or by the Supreme Court of the District of Columbia upon appeal from the Commissioner, the applicant may have remedy by bill in equity; and the Court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear. And such adjudication, if it be in favor of the right of the applicant, shall 129 authorize the Commissioner to issue such patent on the applicant filing in the Patent Office a copy of the adjudication, and otherwise complying with the requirements of law. In all cases, where there is no opposing party, a copy of the bill shall be served on the Commissioner; and all the expenses of the proceeding shall be paid by the applicant, whether the final decision is in his favor or not."

The plaintiff's application relates to rings for holding balls used in ball bearings and keeping them properly spaced. The device specifically involved in the bill consists of a flat hollow ring, upon each of the two edges of which are projections or standards, and on the top of the outer edge triangular flaps projecting over to the top of the corresponding inner projections, thus forming what may be termed a pocket into which the balls are sprung. It will be noticed that plaintiff's claims show two series of retaining standards, each series springing from opposite sides of the ring.

The original application of plaintiff for a patent was filed in 1897 and another in 1900. These applications disclose substantially the same subject matter. In 1903, he inserted three claims, which are numbered fourteen, fifteen and sixteen, which were taken from a patent issued to another party. These claims read as follows:

"14. A ball retaining device for ball-bearings consisting of a ring-shaped portion or base having a series of standards springing
130 from one edge thereof only and provided with sector-shaped
or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

"15. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.

"16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

The question involved is whether these claims describe anything disclosed in his original applications.

The law is well settled to the effect that patents must be restricted as to matters of substance to what was disclosed in the original application.

Railway Co. *vs.* Sayles, 97 U. S., 554.
In re Dilg, 25 App. D. C., 9.

So that the question here involved is whether Dilg's application for a retaining ring having a series "of inner and outer flaps * * * to confine the balls," that is, one series of projections which arise
from both the inner and outer edges of the base ring, warrants
131 an amendment which refers to a series of standards springing
from one edge only.

It seems to me this is entirely a question for expert testimony. And in this conclusion I am sustained by the action of the plaintiff in this case. In the only testimony of any importance which he has added to the record heretofore made is that of an expert to the effect that plaintiff's original claims warranted the inclusion of the contested claims, Nos. 14, 15, and 16.

But if the question is one for experts, I should feel that I stood on more solid ground if I accepted the disinterested views of the primary examiner, the examiners-in-chief, the Commissioner of Patents, and the Court of Appeals (Mr. Justice Duell writing the opinion) all of whom held that the contested claims were not covered by either of plaintiff's original claims, rather than the unsupported views of Mr. Day, who was the plaintiff's expert, and the sole witness upon this crucial point in the case.

All these disinterested experts hold that plaintiff's original application gave him no right to include the claims of Keeper's patent.

I will therefore sign a decree dismissing plaintiff's bill.

ASHLEY M. GOULD, *Justice.*

132 *Decree.*

Filed February 3, 1909.

In the Supreme Court of the District of Columbia.

Equity. No. 26013.

CHRISTIAN F. DILG, Complainant,
v.
EDWARD B. MOORE (Substituted for Frederick I. Allen), Commissioner of Patents, Defendant.

This cause came on to be heard and was argued by counsel for the respective parties; and thereupon, upon consideration thereof, it is ordered, adjudged and decreed that the bill of complaint herein shall be and the same is hereby dismissed at the costs of the complainant.

ASHLEY M. GOULD, *Justice.*

February 3d 1909.

* * * * * * *

To the Honorable the Judges of the Supreme Court of the District of Columbia:

The complainant in the above entitled suit, considering himself aggrieved by the decision of this Court rendered January 28, 1909, directing the Bill to be dismissed, and the final decree entered thereunder on February 3, 1909, dismissing said Bill, hereby appeals from the said decision and the final decree entered thereunder, for the reasons specified in the Assignment of Errors filed herewith, and he prays that this appeal may be allowed and that a transcript of the record, proceedings and papers upon which said decision and

decree were made, duly authenticated, may be sent to the
133 Court of Appeals of the District of Columbia.

Dated New York, N. Y., February 25, 1909.

CHRISTIAN F. DILG.

The appeal above noted is hereby allowed, this 26th day of Feb'y 1909 and the penalty of the appeal bond for costs is hereby fixed at one hundred dollars.

JOB BARNARD, *Justice.*

Memorandum.

February 27th, 1909.—Appeal bond approved and filed.

134 In the Supreme Court of the District of Columbia.

No. 26013. In Equity.

CHRISTIAN F. DILG
vs.
FREDERICK I. ALLEN, Commissioner of Patents.

The President of the United States to Edward B. Moore, Commissioner of Patents, Greeting:

You are hereby cited and admonished to be and appear at a Court of Appeals of the District of Columbia, upon the docketing the cause therein, under and as directed by the Rules of said Court, pursuant to an appeal noted in the Supreme Court of the District of Columbia, on the 26th day of February, 1909, wherein Christian F. Dilg is Appellant, and you are Appellee, to show cause, if any there be, why the Decree rendered against the said Appellant, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness the Honorable Harry M. Clabaugh, Chief Justice of the Supreme Court of the District of Columbia, this 2nd day of March in the year of our Lord one thousand nine hundred and nine.

[Seal Supreme Court of the District of Columbia.]

J. R. YOUNG, *Clerk,*
By F. E. CUNNINGHAM,
Ass't Clerk.

Service of the above Citation accepted this — day of ——, 190–.

[Endorsed:] No. 26013. Law. Equity. Dilg *vs.* Allen. Citation. Issued M'ch 2, 1909. Served copy of the within Citation on Edward B. Moore, Commissioner of Patents, March 2, 1909. Aulick Palmer, Marshal, S. —— ——, Attorney for Appellant.

135 *Memorandum.*

April 1, 1909.—Time in which to file Transcript of Record in the Court of Appeals is extended to April 30, 1909.

Directions to Clerk for Preparation of Transcript of Record.

Filed April 1, 1909.

In the Supreme Court of the District of Columbia.

Equity. No. 26013.

Dilg
vs.
Moore, Commissioner, etc.

John R. Young, Esquire, Clerk of the Supreme Court of the District of Columbia:

Please transmit to the Clerk of the Court of Appeals of the District of Columbia the documents hereinafter described as the record on appeal in the above-entitled cause:

Bill of Complaint, filed Feb. 5, 1906.
Answer of Defendant, " Apr. 2, 1906.
Replication, " " 27, 1906.
Stipulation, " Mar. 28, 1907.
136 "Record" (includes Depositions) Copy herewith, filed Mar. 28, 1907.
Order substituting Moore, Comm'r, for Allen Comm'r, filed June 14, 1907.
Opinion of Judge Gould, filed Jan. 28, 1909.
Decree Dismissing Bill, filed Feb. 3, 1909.
Appeal.
Memorandum of Bond.
Citation.

The Bill, Answer, and Exhibits "B," "C," "F," "H," "J," are all copied in the "Record" filed March 28, 1907. See Stipulation.

It is requested that Exhibits "A," "M" (see pp. 12 & 63 record), "G," "K," "L" (models) be sent to the Clerk of the Court of Appeals.

WALLACE GREENE,
Attorney for Appellant.

137 Supreme Court of the District of Columbia.

United States of America,
District of Columbia, ss:

I, John R. Young, Clerk of the Supreme Court of the District of Columbia, hereby certify the foregoing pages numbered from 1 to 136, both inclusive, to be a true and correct transcript of the record according to directions of counsel herein filed, copy of which is made part of this transcript, in Equity Cause No. 26013, wherein Christian F. Dilg is Complainant and Edward B. Moore, Commissioner of Patents is Defendant, as the same remains upon the files and of record in said Court.

In testimony whereof, I hereunto subscribe my name and affix the seal of said Court, at the City of Washington, in said District, this 26th day of April, A. D. 1909.

[Seal Supreme Court of the District of Columbia.]

JOHN R. YOUNG, *Clerk.*

Endorsed on cover: District of Columbia supreme court. No. 2017. Christian F. Dilg, appellant, *vs.* Edward B. Moore, Commissioner of Patents. Court of Appeals, District of Columbia. Filed Apr. 30, 1909. Henry W. Hodges, clerk.

COURT OF APPEALS,
DISTRICT OF COLUMBIA
FILED
OCT 6 - 1909
Henry W. Hodges,
Clerk.

Court of Appeals,

OF THE DISTRICT OF COLUMBIA,

OCTOBER TERM, 1909. No. 2017.

CHRISTIAN F. DILG,
Complainant-Appellant,

vs.

EDWARD B. MOORE. Commissioner of Patents,
Defendant-Appellee.

APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA.

Brief for Complainant-Appellant.

HENRY D. WILLIAMS,
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Court of Appeals,

DISTRICT OF COLUMBIA.

CHRISTIAN F. DILG, Complainant-Appellant, *vs.* EDWARD B. MOORE, Commissioner of Patents, Defendant-Appellee.	In Equity. No. 2017.

Brief for Complainant-Appellant.

Statement of the Case.

This is an appeal by the complainant from a decree dismissing a bill filed in Equity under Section 4915 Revised Statutes of the United States to compel the Commissioner of Patents to issue Letters Patent to the complainant, Christian F. Dilg, with certain claims hereinafter specified.

October 18, 1897, Dilg filed an application for Letters Patent of the United States for a ball-holding device in ball bearings, and on February 16, 1900, in accordance with a requirement of division on the part of the Patent Office, he filed a divisional application on the same subject matter, serial No. 5434. On September 1, 1903, the applicant added five claims, numbered 14, 15, 16, 17 and 18 respectively, of which claims, 14, 15, 16 and 18 were finally rejected by the Patent Office Examiner. An appeal was taken under Section 4909, Revised Statutes, to the Board of Examiners-in-Chief, who sustained the Examiner in the rejection of Claims 14, 15 and 16, but allowed Claim 18. An appeal was then taken to the Commissioner of Patents on the rejection of Claims 14, 15 and 16, under Section 4910, Revised Statutes, who sustained the finding of the Board of Examiners in-Chief; and from his decision an appeal was taken, under Section 4911, Revised Statutes and Section 9 of the Act of February 9, 1893, 27 Stat. at L., 436, to the Court of Appeals of the District of Columbia, which affirmed the decision of the Commissioner. Thereupon complainant brought a suit in equity in the Supreme Court of the District of Columbia under Section 4915, Revised Statutes, to compel the Commissioner to issue Letters Patent to the complainant containing Claims 14, 15 and 16. From a dismissal of that bill this appeal is taken.

Assignment of Errors.

1. That the Court erred in not adjudging that the complainant is entitled to receive a patent for the invention defined in Claim 14, filed February 16, 1900, serial number 5434.

2. That the Court erred in not adjudging that the complainant is entitled to receive a patent for the invention defined in Claim 15 of said application.

3. That the Court erred in not adjudging that the complainant is entitled to receive a patent for the invention defined in Claim 16 of said application.

4. That the Court erred in holding and deciding

that the complainant is not entitled to receive a patent for the invention defined in Claims 14, 15 and 16 of said application.

5. That the Court erred in not holding and deciding that the evidence herein established the fact that the top portions of the standards as disclosed in the said application are sector-shaped.

6. That the Court erred in not holding and deciding that the evidence herein established the fact that the said application disclosed a ball retainer with standards rising from one edge only.

7. That the Court erred in not holding and deciding that the evidence herein established the fact that the said application discloses a construction which is operative when the row of standards not having the sector-shaped top parts is omitted.

8. That the Court erred in dismissing the bill of complaint herein.

The Complainant's Position.

The merits of this case are peculiarly elusive. The case is not a difficult one, however, and as it is now fully presented, it is believed that this Court will recognize and enforce the rights of the complainant.

The complainant is charged with bad faith, with attempting to purloin the claims of another, and, as proof of this, attention is called to the fact that the claims in issue were not made until September, 1903, and that they were copied from United States Letters Patent No. 686,617, granted to H. B. Keiper on a later application, on November 12, 1901, being claims 1, 2 and 3 of that patent. But the only question for the Court to consider in this case is whether or not Dilg is entitled to make the claims in view of his original disclosure. How then can the issues possibly be affected by the source from which the claims were derived? It makes no difference whether the claims were suggested for interference by the Patent Office of its own initiative, or whether the Patent Office overlooked the interference and the applicant, having discovered the claims by reason of the issuance of the Keiper patent, asked for an interference with the issued patent. Such a procedure is most common. In the present case the Examiner maintains that he did consider the question of an interference between the two applications before passing the Keiper application to issue and concluded that there was no interference in fact. While not presuming to question the veracity of the Examiner, it is of interest to note examples of the loose procedure in vogue in his department at that time. For instance, during the pendency of the Dilg application, the Examiner passed two other applications to issue, one to Hansen and one purporting to be to C. H. J. Dilg, both of which should nave been put in interference with the Dilg application, as is proved by the fact that, after the issue of the two patents, interferences were declared between them and the Dilg application, at the request of the complainant herein, and priority was awarded in both cases to this complainant (see Fowler's answer to Qs. 8 and 11, Rec., pp. 68 and 69). It is also difficult to understand how the patent to Klahn, No. 799,008, Sept. 5, 1905, filed May 23, 1898, of record, issued without interference as to the issued claims, during the pendency of the Keiper application (Rec., p. 76), especially in view of the fact that an interference was declared between the two applications on other claims. As a matter of fact, a three-cornered interference should have been declared between these two applications and the Dilg application. Is it not very possible that after it had been proved that the

Examiner had overlooked two interferences with complainant's application, he was loath to admit a third oversight?

Fowler, in his answer to Qs. 8, 9, 10 and 11 (Rec., pp. 68, 69), explains clearly that the claims in issue were inserted at the earliest possible moment. He testifies as follows:

> "8 Q. You stated that the parent application was hastily prepared in view of the statement that one Herman Hansen, Mr. Dilg's foreman, had filed an application for the same invention, or more specifically, that disclosed in figures 1, 2 and 3, of Complainant's Exhibit F. Was an interference declared with Hansen, and if so, what was the outcome?
>
> A. An interference was declared between the divisional application of Christian F. Dilg with a patent that had been issued to Herman Hansen on March 8, 1908, and another interference was declared between the same application of Christian F. Dilg and a patent dated November 30, 1897, on an application purporting to have been filed by C. H. J. Dilg. Both of these interferences terminated in favor of Christian F. Dilg upon concessions of priority of invention made by said Herman Hansen and C. H. J. Dilg."
>
> "9.Q. Now, please state when you first learned of the existence of the patent to Keiper, a copy of which has been offered in evidence as Complainant's Exhibit D?
>
> A. I first heard about the Keiper patent in the early part of the year 1903, probably in April or May."
>
> "10 Q. Did you disclose this knowledge to either of the Messrs. Dilg to whom you have referred?
>
> A. I had a conference with Mr. C. H. J. Dilg very shortly after I heard of the existence of the Keiper patent."
>
> "11 Q. Why didn't you at that time insert the claims which have been spread upon the record in this cause as 14, 15 and 16, and

> which are involved in this suit, at that time, which I understand was slightly before the declaration of an interference between the divisional application of Christian F. Dilg and the patent to Herman Hansen referred to?
>
> A. I had made an appeal to the Board of Examiners-in-Chief on October 10, 1901, which was a little over a month before the issue of the Keiper patent, for the purpose of obtaining some claims which I thought Mr. Dilg was entitled to, it being, of course, necessary to get the application in shape for issue before interferences could be declared with the Hansen and C. H. J. Dilg patents. The matter was referred back by the Board of Examiners-in-Chief to the Primary Examiner for the consideration of a question of new matter involved in present allowed Claims 1 and 2, the said alleged new matter being as to the snapping of the balls in and out of the retainer. The Primary Examiner concurred in the action of the Board and rejected the claims in controversy, and an appeal was taken to the Commissioner of Patents in person on May 20, 1902. The decision of the Commissioner of Patents did not reach us for several months, I think five or six months, and the said decision being in favor of Christian F. Dilg, proceedings were taken immediately thereafter to have the interference declared between the Dilg application and the patents issued to Herman Hansen and C. H. J. Dilg, which interferences, as stated, were declared on June 9, 1903, and terminated September 2, 1903. The claims at issue, being claims numbered 14, 15 and 16, were filed on September 1, 1903, at the termination of the said interferences, which was the earliest practicable moment they could be presented to the Patent Office for action."

It is not surprising then, in view of the great haste with which the application was originally filed, that all possible combinations and sub-combinations were not originally claimed; and when claims to which complainant was clearly entitled were found in an issued patent, he was prosecuting an appeal on certain claims to get the application in a condition to have interferences declared with the Hansen and C. H. J. Dilg patents. The interference terminated September 2, 1903, and on the day previous, September 1, having heard that concessions of priority were to be made, he made the claims in issue. Clearly he could not have made them sooner. So long as he is entitled to make the claims, and as he made them before the allowance of the application, no rule has been contravened and he is acting entirely within his rights.

Dilg's Preferred Construction.

The function of a ball retainer for ball bearings is to hold the balls in their respective relative positions in the bearing, and prevent the balls from rubbing against each other, thereby eliminating sliding friction and reducing the friction of the bearing to a minimum. In the Dilg preferred construction, illustrated in Figure 2, Complainant's Exhibit B, there is provided a ring-shaped base A and means integral with this base forming recesses or pockets for the balls to retain the balls and keep them separated from each other. These ball-holding recesses A^4 are formed betweeen two adjacent pairs of standards A^1 on the outer edge of the rim and A^3 on the inner edge of the rim, and angular projections A^2 integral with the standard A^1 and extending substantially parallel with the plane of the ring-shaped base A^4. In this construction, the two standards A^1 on the outer edge of the base cooperate to prevent the ball from escaping in an outward direction, the standards A^3 holding the ball against an inward movement and the extensions A^2 retaining the ball against upward movement at right angles to the base.

The Claims Analyzed.

The claims in issue are as follows:

> "14. A ball-retaining device for ball bearings consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.
>
> 15. A ball-retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.
>
> 16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

Claim 14 defines a construction containing the following elements:

(1). a ring-shaped portion or base,

(2). a series of standards springing from one edge thereof only,

(3). such standards having sector-shaped or flaring angularly-arranged extensions.

Claim 15 differs from Claim 14 in that element 2 is described as a series of "integral parts" instead of standards; and Claim 16 differs from Claim 14 in that these standards are defined as springing "axially" from the base.

The claims are, therefore, near enough alike to warrant us in confining our discussion to one of them, and what is said concerning that claim will apply equally to the others. Therefore, considering Claim 14 we will take the elements in order.

1. The "ring shaped base" is, as the words denote, merely an annulus corresponding to the base A in applicant's construction which serves as a seat for the balls.

2. "Standards springing from one edge only" of this base can mean only one thing and that is that there is a series of similar standards which spring from either the inner or outer edge, but they must not be a staggered series, that is, some of them springing from the inner edge and some springing from the outer edge.

3. "Sector-shaped or flaring angularly arranged extensions" This element must be taken to limit and define the second element, that is to say, the standards which rise from one edge only have, each of them, an extension which is characterized as being of sector-shape or flaring and which projects angularly from the standards.

The claim as a whole, therefore, calls for a ring-shaped base having a series of standards springing from one edge thereof only, these standards having the characteristics above defined. It is perfectly clear that the claim can be interpreted in no other way and in its interpretation it may be considered as defining a complete operative construction or as defining a sub-combination of the whole. In whichever light we view it, it is a sub-combination of Dilg's preferred construction and Dilg is absolutely entitled to make it. The claim defines something which Dilg has. That he may have other things in addition thereto is immaterial. We shall now first consider the claims as defining a complete structure and, secondly, as defining a sub-combination.

The Claims Are Warranted by Dilg's Disclosure.

It cannot be maintained that Dilg, in view of his original disclosure, is not entitled to make the claims even as defining a complete operative construction, for they define simply an obvious modification of the preferred construction illustrated in Figure 2 of Complainant's Exhibit B.

In Dilg's original divisional specification appears the following statement (Rec., p. 11):

> "Either the upper or lower portions of said inner or outer projections may be dispensed with, thus reducing the same in size or rather length, and forming either on the inner or outer edge of the ring a series of ridges, which ridges may be made continuous in the form of a rim."

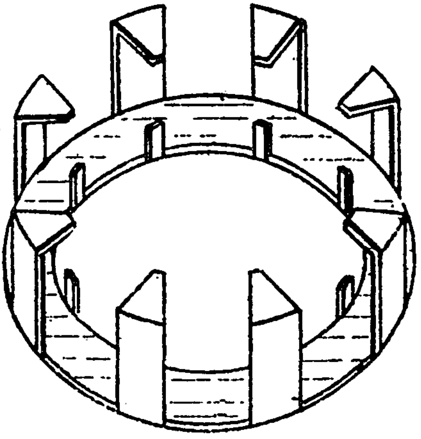
Since the previous tribunals have been unable to perceive the fact that Dilg contemplated various modifications, including that of Keiper, we print on pages 12 and 13 a series of drawings, and for each figure a descriptive excerpt from the statement, showing graphically the obvious meaning of the statement. A comparison of Figures 5 and 6 of these drawings with Figure 2 of Keiper will show at a glance the identity of the construction and thus conclusively show that Dilg had in mind just such a construction. Various other broad statements in the specification are referred to by complainant's expert Day in his answer x-Q. 34 (Rec., p. 63). It is not to be contended that an applicant's invention is limited to the embodiment thereof shown in the drawings.

Extract from Original Divisional Specification.

Page 11 Record

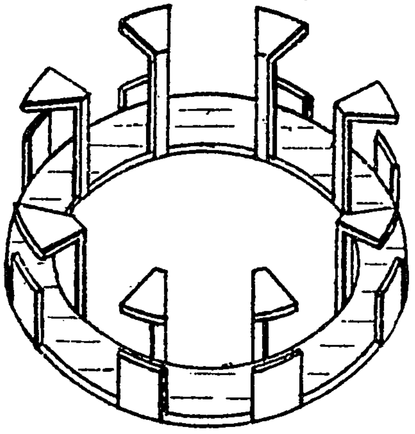
“* * * either the upper or lower portion of said inner or outer projection may be dispensed with * * * forming either on the inner or outer edge of the ring a series of ridges which ridges may be made continuous in the form of a rim ”

NO_1_



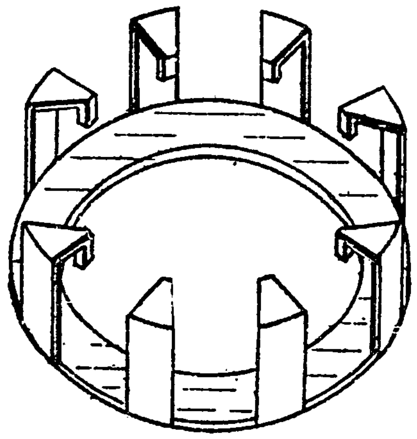
“ * * the upper * * portion of said inner * * projection may be dispensed with * * forming * * on the inner * * edge of the ring a series of ridges.”

NO_2_



“ * * the upper * * portion of said * * outer projection may be dispensed with * * forming * * on the * * outer edge of the ring a series of ridges.”

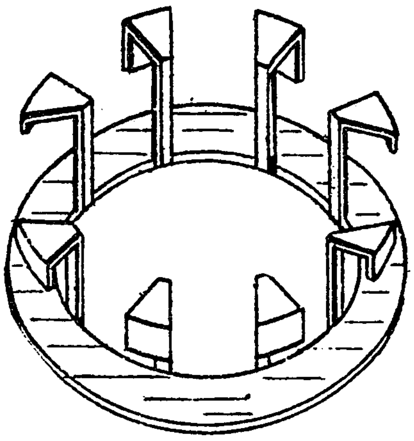
NO_3_



“ * * the * * lower portion of said inner * * projection may be dispensed with * *”

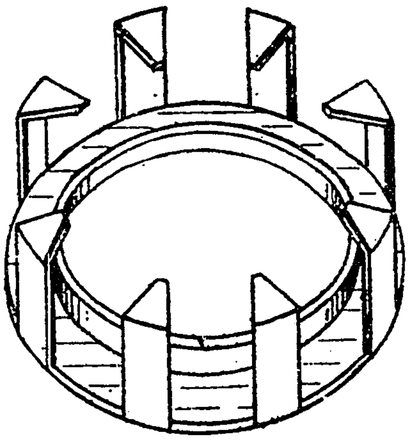
NO.4.

“* * the * * lower portion of said * * outer projection may be dispensed with * * ”



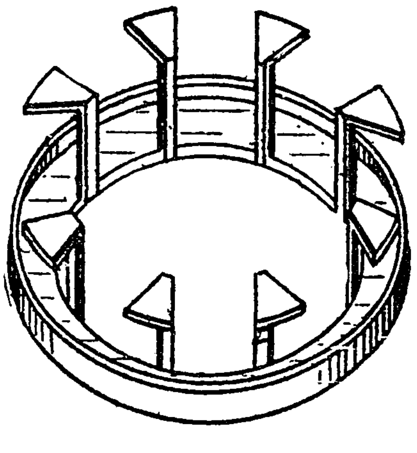
NO.5.

“* * the upper * * portion of said inner * * projection may be dispensed with * * forming * * on the inner * * edge of the ring a series of ridges * * made continuous in the form of a rim.”



NO.6.

“* * the upper * * portion of said * * outer projection may be dispensed with * * forming * * on the * * outer edge of the ring a series of ridges * * made continuous in the form of a rim ”



Day, in his answer to Q. 5 (Rec., p. 51) has very clearly pointed out the applicability of the terms of the claims in issue to the Dilg invention and no further exposition on this point is really needed. However, for the sake of emphasis, let us consider the elements and see whether or not they are found in the Dilg construction. There is no question that the "ring-shaped base" defines Dilg's base A. Now, does Dilg show a series of standards springing from one edge only of this base, such standards having the sector shaped, flaring, angularly-arranged extensions? The standards A^2 undoubtedly satisfy this description. They are a series of standards springing from the *outer* edge only; and these standards A^1 have angularly-arranged projections A^2.

The Dilg Projections Are Sector-Shaped or Flaring.

The "or" is unquestionably used here in a conjunctive sense. The geometrical figure, a sector, is, of course, a part of a circle bounded by two radii and the arc between them. The projections A^2 of Dilg are, therefore, exactly described by this definition.

Considering the meaning of the term "flaring," we have to consider not only its popular acceptation, but also its meaning in the art. Whatever the term "flaring" means in other arts, in this art the term "flaring" as applied to these projections, defines a projection which is wider at the outer than at the inner end. Take, for instance, the patent to Klahn, No. 624,219, May 2, 1899 (Rec., p. 80); the edges of his projections *b* converge as they recede and yet in his Claim 1 he says, "and of extensions flaring inwardly from the flaps."

In the case of *Cameron Septic Tank Co.* v. *Saratoga Springs et al.*, 159 F. R., 453 (C. C. A., 2d Cir.), Lacombe, C. J., said:

> "The patentee introduced a new word to the art—'septic'; he calls his tank a septic tank. Defendant's expert concedes that the term was first used by Cameron and applied to the tank which he constructed and put in operation at Exeter, England. However, this word may have been used subsequently by others, it should, in construing this patent, be given the meaning which the patentee gave it" (p. 455).

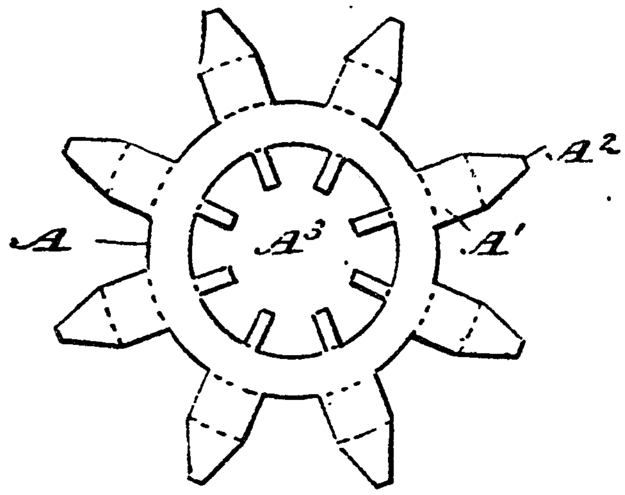
In the case of *Blair et al.* v. *Jeannette-McGee Glass Works*, 161 F., 355, 356, Archbald, J., said:

> "But the word 'plastic' is not to be construed altogether by reference to dictionary definitions. The patent itself indicates what is meant by it."

It therefore follows that the popular meaning of a word cannot be a factor in determining its meaning as used in a patent, but rather must the patent itself indicate the meaning.

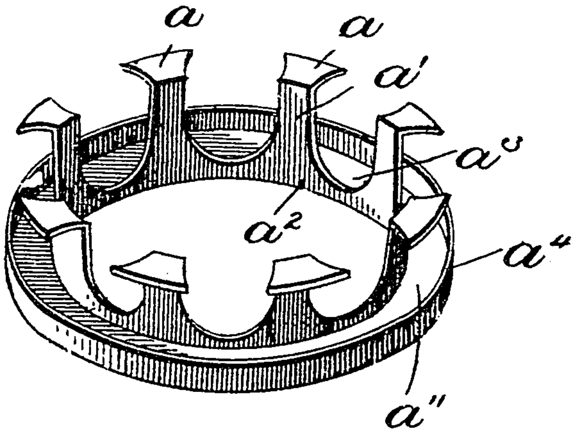
It is well known in the art and is, of course, obvious from a mathematical consideration, that these projections must be wider at the outer end than at the inner end for the reason that the diameter of the outer circle is larger than that of the inner circle, and since the adjacent edges of the two extensions must be parallel or substantially so, the two edges of the extension must, of course, approach each other if they rise on the outer edge, or must diverge if they rise on the inner edge. This shape is known in the art as flaring and no construction of this kind would be operatable unless these extensions were made flaring, for the ball would be otherwise free to roll off the base at the outer edge. For the sake of bringing this clearly to the attention of the Court, we at this point reproduce Figure 11 of Complainant's Exhibit C, Dilg drawings, Figure 3 of the Keiper patent and figure 3 of the Klahn patent, number 624,219.

Fig. 11.



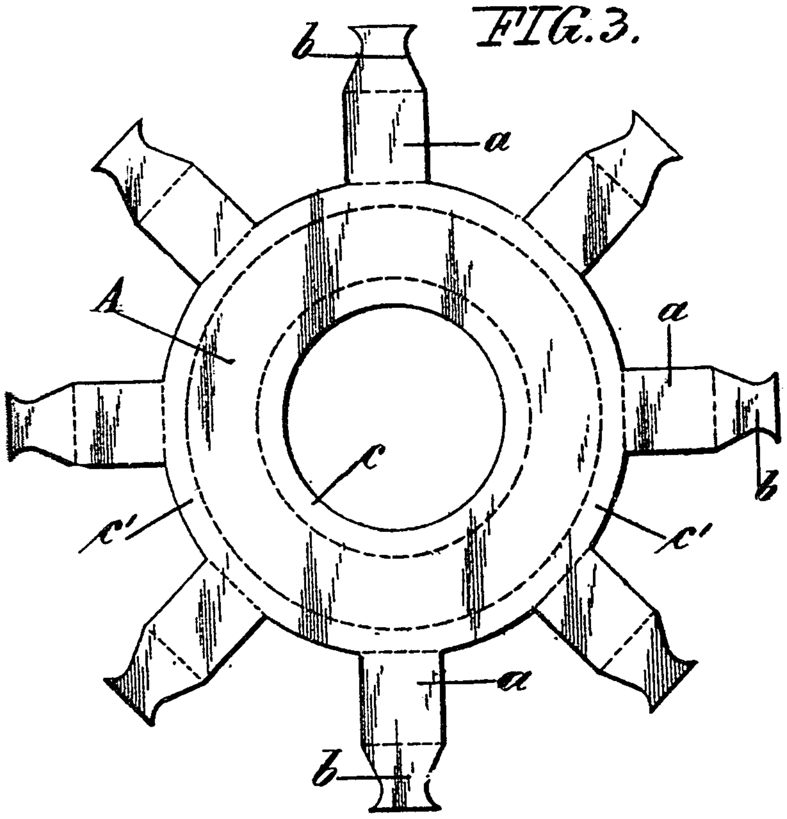
DILG.

Fig. 3



KEIPER.

FIG. 3.



KLAHN.

If Keiper and Klahn have flaring projections, what possible grounds are there for maintaining that Dilg does not also show flaring projections? "Flaring" and "tapering" in this art are used synonymously, inasmuch as their applicability depends solely upon the point of connection with the ring, that is to say, whether the extensions are on the inner series of standards or on the outer series. Therefore, when the Commissioner said in his decision

> "It is found instead of having the ends of his standards 'sector-shaped or flaring,' they are pointed or tapered,"

he showed clearly that he did not at all appreciate the use of the term "flaring" in this art.

Considering now the Keiper construction in reference to which the claims in issue originated, Keiper shows in his drawings standards springing from the inner edge, but a comparison of his Claims 1 and 4 shows that Claim 1 was purposely drawn to cover a construction wherein the standards spring either from the inner edge only, or from the outer edge only, and we therefore at this point parallel the two claims:

KEIPER'S CLAIM 1.	KEIPER'S CLAIM 4.
1. "A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base	1. "A ball-retaining device for ball-bearings consisting of a ring-shaped portion or base
2. having a series of standards	2. having a series of standards
3. springing *from one edge* thereof *only* and provided with	3. spring *from its inner edge only* and terminating in
4. sector-shaped or flaring angularly-arranged extensions,	4. *outwardly turned* sector-shaped or flaring extensions or flanges,
5. whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."	5. whereby suitable spaces are formed for receiving and confining the balls between adjacent standards."

On comparing these two claims we find that they substantially differ only in that Claim 4 describes the standards which rise from the ring base as springing from "its inner edge only" (the specific construction shown in the drawings), while Claim 1 *does not specify which edge the standards spring from;* and, further, in stating that the sector-shaped or flaring extensions are "outwardly turned," whereas in Claim 1 *it is not stated whether they turn outward or inward.*

It must be admitted that both Keiper in presenting these two claims, and the Commissioner of Patents in issuing a patent containing them, had in view the fact that according to Claim 4 the standards *must* rise from the inner edge of the base, and the top extensions *must* turn outward; whereas, according to Claim 1, the standards *may spring from either edge of the ring*, and the top extensions *may turn either outward or inward*; for if this be not so the patent will be found to contain two claims identical in scope, a condition that is contrary to the practice of the Patent Office, and contrary to the rule that claims must be construed to be different rather than identical.

> Thomson-Houston Electric Co. *v.* Nassau Electric R. Co., 110 F. R., 647.

Now it will be noted that in *both* these claims the extensions are defined as "sector-shaped or flaring." Keiper speaks of them as "flaring," *whether they extend or are turned inward* from standards that are arranged along the outer edge only of the base ring, as contemplated in Claim 1, or *whether they extend or are turned outward*, as specifically claimed in Claim 4, and as shown in the patent drawings. In either of the two constructions contemplated by the broader Claim 1 *the extensions are sector-shaped or flare as regards* *the ring shaped ball-retainer as an entirety*, that is to say, *they flare when considered from the center of the retainer taken as a view point.*

We have already pointed out that *this* flaring of the top extensions of the retainer is a characteristic and necessary feature of a holder of the type under consideration. Thus considered *both* Claims 1 and 4 of the Keiper patent have meaning; but if the phrase "sector-shaped or flaring" be restricted to mean only a specific construction wherein the extensions *must* turn outward, as the Commissioner of Patents has done in considering that phrase, then all distinctions between Claims 1 and 4 of the Keiper patent vanish. It is a rule of patent construction well understood that such meaning or interpretation should be given to the words used in the claims of a patent as will cause each claim to have a different scope and meaning.

Operativeness.

It has been reiterated in the previous decisions that the Dilg retainer, without the inner standards A^3, would be inoperative. Even without the convergence of the extensions A^2 towards each other as they approach the center of the ring, which convergence has been proved and admitted, the retainers would still serve a very useful purpose without the inner standards A^3. On this point the expert Day, whose qualifications especially fit him to speak, says (Rec., p. 55, 6-Q):

> "6-Q. I believe you have stated that you have had practical experience in the art relating to ball bearings and ball retainers. Please state whether the structure disclosed in Figures 2 and 3 of Complainant's Exhibit B and as described in the specification relating thereto would be a practical and operative device if there were no series of auxiliary retaining posts A^3, and if the top por-

tions or extensions A^2 were neither bent downwardly so as to prevent the balls from escaping inwardly nor had edges which in adjacent top portions or extensions converged toward the center of the ball retainer; in other words, if provision were only made to restrain the balls from escaping from the retainer upwardly, downwardly and outwardly? In this connection please state your reasons for your conclusion?

"A.—The specific ball retainer outlined by your question would be an operative ball retainer, both theoretically and commercially. It would have many practical uses. Such a ball retainer is exemplified in the model referred to in my foregoing answer if the adjacent edges of adjacent sector shaped extensions be made exactly parallel with each other and if such extensions be disposed in plane parallel with the ring-shaped base so that these sector-shaped extensions cannot retain the balls from being withdrawn inwardly. A ball-retainer thus constructed may be slipped over a round axle, the balls being inserted in the ball-retaining spaces either before the ball retainer is slipped over the axle or such balls being sprung into place after the ball-retainer is in place on the axle. The operation of thus assembling the ball-retainer, balls and axle may be aptly illustrated by slipping the ball-retainer over the middle finger employed to represent the axle. When thus assembled with the axle, the ball retainer serves to retain the balls in their proper positions relative to one another and to the axle, and the ball-cup or ball-race may be removed without resulting in spilling the balls, or, in the case of a bicycle crank-shaft, the crank-shaft may be wholly withdrawn from the crank-hanger and ball-races, the ball-retainer and balls coming off intact with the axle, and the balls not being spilled. To thus avoid spilling the balls when dismembering a bicycle is the prime function of the ball-retainer in its adaptation to bicycles, although this particular ball-retainer also performs a ball separating function conducive to the anti-friction results. To show how gen-

> erally the last proposition applies to ball-retainers having the broad characteristics of this model, it may be noted that if the sector-shaped extensions are connected with a series of standards springing from the inner edge of the ring-shaped base in lieu of the outer edge thereof, the ball-retainer will then of itself retain the balls from withdrawal in all directions except the outward radial direction, and when inserted into a hollow cylindrical ball-race with balls placed in the ball-retaining spaces of the retainer, will effectually retain the balls intact with the retainer and in proper positions relative to one another and to such retainer, even after the axle is wholly withdrawn. In this last instance the ball-retainer accomplishes the most desirable result of permitting the axle to be withdrawn without spilling the balls, and permitting the ball-race, ball-retainer and balls to be freely handled as an intact unit."

Hence, even if the Dilg retainer would not retain the balls against inner escapement without the inner standards A^3, it would still perform the functions of a ball-retainer, that is, it would keep the balls separated and hold them in their relative positions when assembled in the bearing; it makes no difference whether or not it would allow the balls to escape when taken out of the bearing. The device would still be useful and operative and admittedly new, and therefore in every particular a proper subject for a claim such as the claims in issue.

But it has been proved by the testimony of the expert, Hertzog (Rec., p. 47), and by the testimony of Fowler, Dilg's patent attorney (Rec., p. 65, Q 4), and by Complainant's Exhibits F and J, that the co-operating edges of each pair of extensions A^2 do converge sufficiently to retain the balls against inward escapement without the inner standards A^3. Furthermore, in the original divisional application, describing the operation of the device, the specification states (Rec., top of p. 12):

> "The side bearing points or detents as stated prevent the balls from rolling out of their sockets";

and in describing figures 4 to 7, the specification states (Rec., p. 11):

> "In *this instance*, the edges of the walls of the recesses A^4 formed between the upper portions A^{12} of the ring are parallel with each other",

proving conclusively that it was the intention of the applicant that in the other instances they should not be parallel.

This convergence is admitted by the Commissioner of Patents, for in his brief before the lower court appears this statement:

> "But even if some slight convergence of these edges was disclosed upon the original drawings, *as is proved to be the case*, perhaps, by the remaining witnesses and the sketch constructed during the taking of testimony and introduced in evidence as Complainant's Exhibit J".

The *extent* of the convergence is not the point, as that is merely a question of degree. The point is, do the opposite side edges of a recess converge, or are they parallel in Figures 1 to 3? If they converge at all, they must serve, *per se*, to retain the balls, and, as a matter of fact, it will be seen by the models filed as exhibits by Dilg that a convergence so slight that it can hardly be detected by the naked eye, and less even than that shown in the drawings, is sufficient to retain the balls. Even if it were necessary, which it is not, to bend the points of the parts A^2 slightly downward to retain the balls, this could be done under the original divisional application, which says that the said parts are "practically" and *not absolutely* horizontal. Since this is the case, what possible grounds can there be for urging the inoperativeness of appellant's construction as defined by the claims in issue?

Why, then, should Keiper be allowed to make the claims any more than Dilg? Keiper employs a continuous ring on the edge of the base opposite that from which the extension bearing standards rise, and he nowhere in his patent even hints of the possibility of eliminating this ring. Dilg in his preferred construction employs a series of short standards exactly equivalent to Keiper's rim, since the standards perform the same function as the rim, and are located at the points where alone is the Keiper rim useful. The number of these standards is not limited, and if multiplied sufficiently they become a continuous rim as stated in the original divisional application, (Rec., p. 11), and the two constructions are practically identical.

To show the absolute identity of function of the Keiper unbroken wall or rib a^4 as conceived by Keiper himself, and to demonstrate, moreover, that he regarded this wall as an *essential* to prevent egress in an *inward* direction, it is only necessary to turn to his specification, p. 2, line 5, as follows:

> "*the upper edge of the rib* a^4 should bear such relation to the outer edges of the flange-sectors *a* as to prevent the seated balls from falling out of the recesses *in this direction*" (inwardly);

and line 35, as follows:

> "ring, the latter having its outer edge upturned, so that the balls may be sprung into the spaces formed for receiving and confining them between adjacent standards and be *held in such spaces by contact with said upturned edge;*"

claim 6, line 103, as follows:

> "flanges of substantially sectoral form at the ends of the standards projecting outwardly over the base-ring *so as to combine with the upturned edge of the latter in retaining the balls;*"

and claim 7, line 112, as follows:

> "a flange on the intact end of the tube with a *marginal rib which combines with the edge of the sectoral flanges in confining the balls.*"

It therefore appears that the functions and combination of elements of Dilg's and Keiper's *specific construction* are the same. So far as the combination of elements called for *in the claims* at issue is concerned, however, the identity of function is even more clear. The function of the *claimed combinations* marks, of course, the limit of the inquiry; and the auxiliary rib or series of standards is not claimed. The base and the series of standards, with their top portions, obviously prevent egress of the ball bearings in three main directions, upwardly, downwardly and either inwardly or outwardly, according to whether such standards rise from the inner or outer edge of the base. It is immaterial in this view of the case whether or not the Court finds that the top portions or extensions of Dilg or of Keiper have their adjacent edges converging toward the center of the ring so as to confine or assist in confining the ball bearings in the fourth main direction, inasmuch as the objects, so far as the subcombination is concerned, are attained without such additional function. Both Dilg and Keiper agree in this.

Sub-combination.

As previously stated, the claims may also properly be considered as defining a sub-combination of Dilg's construction. It is an elemental principle that "the specification may contain a claim for the whole, and other claims for separate parts, and still other claims for separate sub-processes or combinations" (Walker on Patents, Sec. 176). Dilg in his preferred construction shows a ring-shaped base having a series of standards on the inner edge only and another series of standards on the outer edge only, and those on the outer edge only have angular sector-shaped or flaring extensions. That standards having such projections as Dilg shows on the outer edge only are useful when employed in connection with a proper base, is proved by Day in his answer previously referred to (Q. 6, Rec., p. 55). The combination of a ring-shaped base and standards rising on one edge only of this base and having angular sector-shaped projections is, therefore, new and useful and certainly inventive; and since it satisfies all of the requisites of patentability, no possible reason can be advanced for refusing Dilg claims on the sub-combination.

When the claims are viewed as claims for sub-combinations, the question of operativeness is no longer pertinent, for the courts have repeatedly held that sub-combinations need not be operative *per se.* The United States Supreme Court has so held in the case of

Deering v. *Winona Harvester Works,*
155 U. S., 286, 302,

Mr. Justice Brown delivering the opinion:

> "Defendants further insist that the twentieth claim of this patent is invalid, by reason of the fact that, if the board d^1 be construed, as it evidently must, as a board pivoted to the butt adjuster, the combination is incomplete and inoperative, because the means by which it is held and controlled are not stated in the claims; and if the additional elements, namely, the arms d^2, d^3 and d^4, be read into it, it becomes the same as the twenty-first claim, and the novelty of the claim must be made to depend upon the peculiarities of the board d^1. Admitting that additional elements are necessary to render the device operative, it does not necessarily follow that the omission of these elements invalidates the claim, or that the precise elements described in the patent as rendering it operative must be read into the claim:"

In the case of *Thompson-Houston Electric Co.* v. *Black River Traction Co.*, 135 F. R., 759, 763 (C. C. A., 2d Cir.), it was held—

> Wallace, C. J. "Many sub-combinations, although new, are not useful, except to perform their appropriate functions in the machine of which they are a part. The description in the patent of the whole machine, and of the means or mode by which the sub-combination is brought into co-operative relation with the other parts, usually indicates how the sub-combination may effect a useful result. When this is so, the combination need not be operative alone, because (to use the language of Mr. Walker) 'utility is justly ascribed to things which have their use in co-operating with other things to perform a useful work.'"

Judge Coxe, in the case of *Kenney Mfg. Co.* v. *J. L. Mott Iron Works*, 137 F. R., 431, 432, said:

> "It is not denied that the combination is inoperative when separated from its environment * * *. If the claim shows a combination of parts forming a workable device, when attached to a structure for which it is evidently intended, it is enough."

The subject of a subcombination claim, therefore, does not need to be operatable alone, "for utility is justly ascribed to things which have their use in co-operating with other things to perform a useful work," but, irrespective of the question of operativeness, each of the claims in issue stands the test of invention, of novelty and of utility, and, therefore, unquestionably define a patentable subcombination of Dilg's preferred construction,

Alternativeness.

To the argument that the claims here in issue are alternative to certain claims already allowed to Dilg which cover both series of standards shown in the Dilg drawing, the reply is that the claims do not exclude any features of construction additional to the features defined in the claims. The claims in issue define certain characteristics of the standards which spring from one edge only, and to this extent define a device which must have these characteristics in a series of standards springing from one edge only in order that it may have the construction defined in and covered by the claims. To this extent the claims in issue are precise and of limited scope. But the claims in issue do not place any limitations of structure upon any part of the device not defined in the claims. They refer to one edge only of the ring and are silent as to what may exist at the other edge of the ring. Allowed Claim 3 (Rec., p. 24) defines

> " a ring having a series of inner and a series of outer side flaps (standards) radially opposite each other and extending upwardly from the ring."

This claim defines additional standards to those defined in the claims in issue and is broader in that the limitations as to the " flaring " character of the standards springing from one edge only is omitted.

Allowed Claim 4 (Rec., p. 24) is again of different scope, in that it defines both series of standards and contains the limitation as to the flaring or tapering character of the series of standards springing from the outer edge only.

It will be evident that these claims are not alternative. By way of illustration, reference may be made to Keiper's Claim 1, wherein is defined a series of standards springing from one edge only, which may be either edge, to Keiper's Claim 4, which defines a series of standards springing from one edge only, which must be the inner edge, and to Keiper's Claim 6, which is like Claim 4, but adds

" an upturned outer edge " which is nothing more than Dilg's inner edge flaps joined together and broadly the equivalent thereof.

The Claims must be Construed According to the intention of the Inventor.

This is an elemental rule in the construction of a claim. In speaking of the construction of letters patent, Robinson says:

> " When the language is not clear or is capable of various constructions, recourse to extrinsic facts is often necessary to ascertain the sense in which in this particular case it must be understood. The most important of these facts is the nature of the actual invention which the patent was intended to secure. This being known, the language of the patent must be construed to correspond with its essential attributes, unless such a construction would do violence to the terms employed." (Rob. on Patents, Sec. 739).

See *Electric Co.* v. *Traction Co.*, 135 F. R., 759.

To ascertain the intention of the inventor, the claims must be construed in the light of the specification, and when the intention of the inventor is manifest, that construction must be adopted which sustains the claims rather than that which destroys them. *Filter Co.* v. *Jackson*, 140 F. R., 340, 343. Sanborn, C. J., in delivering the opinion of the Court in this case, said:

> " The true rule is that the specification of a patent, which forms a part of the same application as the claims, must be read and construed with them, * * * for the purpose of ascertaining the true meaning and the actual intention of the parties when they were made " (p. 345), citing *Seymour* v. *Osborne*, 11 Wall, 516, 547.

In the case of *Smith* v. *Downing*, 17 Gour., 6-15, where the Examiner construed the claims and based his decision on what they "seem to imply," instead of what they clearly expressed, and upon statements of function which they contained to the exclusion of proper structural definition, it was held that the practice of construing claims away from the plain, obvious meaning of their terms leads to confusion and is not approved.

If the wording of the claims is fairly capable of two constructions, one of which will sustain and the other defeat them, that which will preserve them should be adopted.

Ives v. *Hamilton*, 92 U. S., 426;
Rulte v. *Elwell*, 15 App. Cas. (D. C.), 21;
Winans v. *Denmead*, 15 How., 330.

Commissioner Allen iterated this same doctrine in the case of *ex parte* Cutler. In this case Cutler made claims found in a patent granted to another, and the Examiner eventually allowed the claims in Cutler's application, but refused to declare an interference, stating that " the terms of the claims mean different things in the different cases and there is no interference in fact." The Commissioner said:

> " The devices of the parties are of the same general character, and the terms of the claims refer to corresponding parts, having to some extent corresponding functions in each case. The claims when properly read are undoubtedly generic to the two disclosures, and an interference should be declared. * * * No better method is known for securing the benefits of uniformity and certainty in the construction of claims and at the same time giving effect to the undoubted intention of the parties drawing them than to give invariably to each claim the broadest meaning which can be imposed upon it with-

out violence to the language used therein" (*Ex parte* Cutler, 123 O. G., 655).

It therefore follows that the claims must be construed to define a ring-shaped base having a series of standards which come within the definition of the claim in the two particulars stated; that is to say, these standards shall spring from one edge only of the base, and these standards shall be provided with sector-shaped or flaring angularly arranged extensions; and as thus construed, the claims are proper sub-combination claims in Dilg's application.

Dilg is Not Harassing Keiper.

The position of the Patent Office is a paradoxical one. It says, on the one hand, that Dilg is entitled to his Claim 18, which is of a scope similar to Keiper's Claim 6, and it also allows him his basic claims, 1, 2, 11, 12 and 13, which dominate Keiper, and yet, at the same time, it says that Dilg is not entitled to make Keiper's Claims 1, 2 and 3 on account of "harassing" Keiper.

It is difficult to see in what way Dilg's motives in making the claims enter into the question. The sole question is whether or not his disclosure entitles him to make them. However, he never had the least intention of harassing Keiper. There is nothing in the record from which such a conclusion is deducible.

This accusation of the Examiner is as fallacious as is the statement that

> "In fact, Dilg never knew he had any 'standards' until he saw Keiper's patent."

It is true that in his application as originally filed Dilg spoke of the upwardly projecting portions as "flaps" and the horizontal parts leading therefrom as "extensions," but the Examiner conceals the fact, which he must have known, that in the art these parts were commonly called "flaps" and "extensions" respectively, as appears from the Keiper patent (page 2, lines 47–49), "the standards and their flanges (otherwise termed 'flaps' and 'extensions' respectively)."

Both of these accusations reflect the attitude of the Examiner and the absence of care on his part as to the correctness of his statements.

It is to be remembered that if it is found that Dilg's disclosure entitles him to make the claims in issue, the Patent Office will at once require the question of which claimant is the prior inventor to be determined in an interference proceeding, in accordance with the rules; and it is not believed that Dilg should be denied the privilege of having this question settled in the regular way.

Prior Adjudication in This Court.

The attention of the Court is called to the fact that it is in no wise asked to reconsider a previous decision. When complainant was before this court in accordance with Section 4911 R. S., and Section 9 of the Act of Feb. 9, 1893, 27 Stat. at L. 436, he relied solely upon the record of his case in the Patent Office. This suit, being a bill in Equity brought under Section 4915, R. S., is an *inter partes* action in which each party has had an opportunity to substantiate his case by testimony. The defendant has taken no testimony and relies solely upon his previous record; but the complainant has proved many valuable additional facts by new exhibits and by competent witnesses, and this evidence stands uncontradicted. Had the complainant nothing more than the record previously before this Court to rely upon, he would hesitate to again seek the consideration of the Court; but, in view of the unequivocal additional proofs, the case has become a new and different one, and it is in the light of a totally different statement of facts and the presentation of new proofs that the complainant has brought this appeal to this Court.

Conclusion.

In conclusion, it is urged that the claims in issue are logical sub-combination claims of the Dilg invention; that in his original disclosure Dilg shows each and every element of the claims; and that the claims, when read in the light of the Dilg disclosure, comprise all the essentials of patentability. The source from which the claims are derived does not enter into the question, and even if this be considered the claims must be given a meaning such as would apply to the Dilg disclosure. The sole question here involved is, is Dilg entitled to make the claims, and of this, in view of the foregoing, there can be no reasonable doubt.

It is therefore submitted that the decree appealed from should be reversed and a decree directed in accordance with the prayer of the bill, with costs to the complainant-appellant in this Court and to the complainant in the Court below.

Dated New York, N. Y., Sept. 28, 1909.

Respectfully submitted,

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COURT OF APPEALS,
DISTRICT OF COLUMBIA
FILED
OCT 14 1909
Henry W. Hodges,
Clerk.

In the Court of Appeals of the District of Columbia.

OCTOBER TERM, 1909.

General Calendar, Appeal No. 2017.

Christian F. Dilg, Appellant,
v.
Edward B. Moore, Commissioner of Patents.

BRIEF FOR THE COMMISSIONER OF PATENTS.

WEBSTER S. RUCKMAN,
Counsel.

In the Court of Appeals of the District of Columbia.

OCTOBER TERM, 1909.

CHRISTIAN F. DILG, APPELLANT, *v.* EDWARD B. MOORE, COMMISSIONER OF Patents.	General Calendar, Appeal No. 2017.

BRIEF FOR THE COMMISSIONER OF PATENTS.

This is an appeal by the complainant, Dilg, from the decree of the Supreme Court of the District of Columbia (Record, p. 86), dismissing his bill of complaint. Complainant's bill in equity was filed under section 4915 of the Revised Statutes to compel the Commissioner of Patents to issue him a patent. Section 4915, under which the suit was brought, reads as follows:

> SEC. 4915. Whenever a patent on application is refused, either by the Commissioner of Patents or by the Supreme Court of the District of Columbia upon appeal from the Commissioner, the applicant may have remedy by bill in equity; and the court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear. And such adjudication, if it be in favor of the right of the applicant, shall authorize the Commissioner to issue such patent on the applicant filing in the Patent Office a copy of the adjudication, and otherwise complying with the requirements of law. In all cases, where there is no opposing party, a copy of the bill shall be served on the Commissioner; and all the expenses of the proceeding shall be paid by the applicant, whether the final decision is in his favor or not. [See § 629, ¶ 9.]

HISTORY OF THE CASE.

Complainant filed his original application for patent in 1897, No. 655652, for an improvement in ball bearings. While that application was still pending, he filed, on February 16, 1900, a second application (Record, p. 10) as a division of his former application, and it is this second application that forms the basis of the present appeal. It was not until September 1, 1903, long after the application was filed and after it had received numerous actions, that Dilg presented, by amendment, the claims forming the subject-matter of this appeal (Record, p. 19). These claims were copied from a patent No. 686617, issued November 12, 1901, to H. B. Keiper (Record, p. 76), and the complainant, Dilg, at the conclusion of said amendment, requested that an interference be declared between his application and the patent to Keiper (Record, p. 21). The new claims thus presented were rejected by the examiner in charge of the application in the Patent Office on the ground that they set forth a structure not disclosed in complainant's application when filed; that they are unwarranted by the drawing or description as filed; and that they embody new matter (Record, p. 31). On appeal by complainant to the examiners in chief under section 4909 of the Revised Statutes the decision of the examiner was affirmed (Record, p. 34), as was also the decision of the examiners in chief by the Commissioner on appeal to him under section 4910 of the Revised Statutes (Record, p. 37). Thereupon appeal was taken to this court under the provisions of section 4911 of the Revised Statutes, and section 9 of the act of February 9, 1893 (27 Stat. L., 456), with the result that the decision of the Commissioner was affirmed (Record, p. 42; 25 App. D. C., 9). Dilg then filed a bill in equity in the Supreme Court of the District of Columbia, under section 4915 of the Revised Statutes. The opinion and the decree of the latter court dismissing the bill of complaint are found on pages 84 and 86 of the record. The present appeal is taken from said decree.

This court is familiar with the subject-matter of the Dilg application from its prior consideration of the case, and it will suffice to briefly refer to the invention thereof. The application refers to rings or retaining devices for holding in place the balls used in ball bearings. Several forms of the device are shown and described in the application, but the only one that is claimed by Dilg to furnish any basis for the claims under consideration, and which therefore needs to be considered, is that shown in figures 2, 3, and 11 of the drawings (Record, opposite p. 74). This device consists of a flat ring or annulus A, having upon its edges oppositely disposed vertical projections or standards. Those on the outer edge are lettered A′ and those on the inner edge A^3. The end portions of the projections A′ are bent over at right angles, forming flat angular flaps A^2, extending over to the top of the projections A^3 in a plane parallel to the base of the ring. The balls are sprung into the spaces between the projections and extend beyond the same for contact with the axle and its bearing.

THE CLAIMS IN CONTROVERSY.

The claims in controversy are complainant's claims 14, 15, and 16 (Record, p. 26), and read as follows:

> 14. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing from one edge thereof only and provided with sector-shaped or flaring angularly-arranged extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.
>
> 15. A ball retainer consisting of an annular base portion and a series of integral parts extending from one edge only of said base and having flaring portions arranged at an angle thereto, whereby suitable spaces are formed for receiving balls which are sprung into said spaces and confined between said parts.
>
> 16. A ball-retaining device for ball-bearings, consisting of a ring-shaped portion or base having a series of standards springing axially from one edge thereof only and terminating in sector-shaped or flaring angularly-arranged flanges or extensions, whereby suitable spaces are formed for receiving and confining the balls between adjacent standards.

As heretofore stated the claims are the same as claims 1, 2, and 3 of Keiper's patent (Record, p. 76), and were copied by the complainant after the issuance of the Keiper patent for the purpose of contesting priority of the invention defined thereby. Had the interference requested been declared and the rulings there made which have been made in the *ex parte* prosecution of ~~Keiper's~~ Dilg's application regarding these claims, the interference would have been dissolved or priority would have been rendered in favor of Keiper upon the ground that Dilg never made the invention of the issue. In the Keiper application in which the claims originated the language used in said claims, given its natural and well recognized meaning, unquestionably properly defined his invention. When it is attempted to read the claims on complainant's structure, it has been the uniform opinion of the various Patent Office tribunals, of this court on appeal therefrom, and of the Supreme Court of the District of Columbia that certain structure called for is entirely wanting in the application as filed, and that as to other structure, the claims apply thereto, if at all, only by giving the language a forced and strained interpretation.

THE LAW AS TO NEW MATTER.

The law is well settled that a patent containing new matter or anything not disclosed in the application therefor when filed is invalid. While the application may be amended to correct matters of form or to describe more clearly an invention unmistakably disclosed in an application when filed, no addition or modification in substance can be made in the subject-matter of the invention. (*Railway Co.* v. *Sayles*, 97 U. S., 554; *Eagleton Co.* v. *West*, 111 U. S., 490; *Kittle* v. *Hall*, 29 F. R., 508; *Brush Co.* v. *Julien Co.*, 41 F. R., 676; *Western Co.* v. *Sperry Co.*, 58 F. R., 186; *Michigan Co.* v. *Car Co.*, 67 F. R., 121; *In re Dilg*, 25 App. D. C., 9; *In re Scott*, 25 App. D. C., 307; *In re Duncan et al.*, 28 App. D. C., 457.)

In support of the above statement it is unnecessary to do more than to refer to the opinion of this court delivered by Mr. Justice Duell on Dilg's former appeal (Record, p. 42; 25 App. D. C., 9). It is noted that in said opinion two different appeals of Dilg are discussed and that the excerpt from said opinion given on page 42 of the Record embraces only that portion especially directed to the claims here in controversy. Before discussing either appeal specifically, however, the court considered the law applicable to both cases. In said opinion the court said:

> Before proceeding to consider the question presented by the two appeals, it may be premised that while we do not question the right of an applicant, in his endeavor to

> protect his invention by apt claims, to amend the specification, including thereunder the claims, as long as he keeps within the requirements of the statutes and the rules of the Patent Office based thereon, he is not permitted at any time to introduce new matter into his application, and obtain therefor a date as of the date of the original application. The reasons for this are too obvious and well known to require enumeration. It is the duty of the Commissioner of Patents to reject all claims, a basis for which is not found in the application as originally filed."

The opinion then quotes from the opinion of the Supreme Court of the United States in the leading case of *Chicago and N. W. R. Co.* v. *Sayles* (97 U. S., 554), as follows:

> It will be observed that we have given particular attention to the original application, drawings, and models filed in the Patent Office by Thompson and Bachelder. We have deemed it proper to do this because, if the amended application and model filed by Tanner five years later embodied any material addition to or variance from the original—anything new that was not comprised in that— such addition or variance can not be sustained on the original application. The law does not permit such enlargements of an original specification, which would interfere with other inventors who have entered the field in the meantime, any more than it does in the case of reissues of patents previously granted. Courts should regard with jealousy and disfavor any attempts to enlarge the scope of an application once filed, or of a patent once granted, the effect of which would be to enable the patentee to appropriate other inventions made prior to such alteration, or to appropriate that which has, in the meantime, gone into public use.

COMPLAINANT'S APPLICATION WHEN FILED DID NOT DISCLOSE ANY FORM OF DEVICE HAVING STANDARDS OR PROJECTIONS UPON ONE EDGE ONLY OF THE RING OR BASE PORTION.

Claim 14, the first of the claims in controversy, among other thing calls for "a ring-shaped portion or base having a series of standards springing from one edge thereof only." This feature is included in claim 16 in the same language, except that the word "axially" is inserted after "springing." Claim 15 calls for this feature in somewhat different language as follows: "An angular base portion and a series of integral parts extending from one edge only of said base."

It has uniformly been held by all the tribunals that have heretofore passed upon these claims that this structure of a series of standards or integral parts extending from one edge only of the base portion, as called for in the claims, is not found in Dilg's device, but that, on the contrary, in his device the standards or integral parts extend from both edges of his base portion. Thus, in the form of his device relied upon by Dilg to support these claims—that shown in figures 2, 3, and 11—there is a series of standards or integral parts A′ extending from the outer edge of the base portion A, and another series A^3 extending from the inner edge of the base A. There was no intimation in the application when filed that one of these series might be dispensed with, and all of the claims in the case prior to the insertion of these claims from the Keiper patent ~~application~~ call for both the inner and the outer projections. The original specification in this application uses the terms "bearing points, flaps, or detents" instead of "standards" and describes the construction as follows (Record, bottom of p. 10):

> Referring particularly to the drawings, A denotes my ball-holding device located in the chamber formed by the inner flanges of the hub A^{21} and the cones of the axle A^{22}, consisting ordinarily of a practically horizontal ring having a series of *inner* and *outer* bearing points or detents, to retain the balls B; the said bearing points consisting, as in figures 2 and 3, of *inner* and preferably wider *outer* and practically vertical side flaps or upwardly extending projections A^3, A′, radially opposite each other, and extending upwardly from the ring; either of them also having a preferably tapering extension or top portion or plate A^2, practically parallel with the ring A, and bent over so that it contracts or lies adjacent to its *oppositely disposed* raised projection. Intermediate each pair of *inner* and *outer* flaps or projections, spaces or recesses A^2 are formed. (Italics mine.)

The inner and outer bearing points or detents are again referred to in the original specification in the following statement (Record, bottom of p. 11):

> In operation the balls B are placed in the recesses between each pair of *inner* and *outer* bearing points or detents.

* * * * *

Dilg's application was repeatedly amended as shown by the copy of the file wrapper on pages 13 and 14 of the Record.

All of these amendments as made have not been given in the Record, but on pages 14–19 is found a clean copy of the specification and claims as they stood just prior to the amendment of September 1, 1903. The application as amended prior to September 1, 1903, the date on which Dilg introduced the claims from the Keiper patent, described the device as having flaps or projections from both the inner and outer edges of the base rings, and none of the thirteen claims that had been entered up to that time said anything about having them upon one edge only.

Even appellant now admits that the element of the claims, "a series of standards springing from one edge thereof only," can have but one meaning and that it calls for a construction having the series of standards upon either the inner or the outer edge, but not upon both edges of the base. In his brief, filed on this appeal, appellant states (p. 9):

> "Standards springing from one edge only" of this base can mean only one thing, and that is that there is a series of similar standards which spring from either the inner or outer edge, but they must not be a staggered series; that is, some of them springing from the inner edge and some springing from the outer edge.

It is interesting to note how appellant has attempted to find something in his construction which will answer to the terms of the claims or some statement in his specification that will warrant the construction called for, and, upon finding one contention untenable, has promptly shifted to another. When the case was previously before this court on appeal from the decision of the Commissioner of Patents, appellant attempted to reconcile his construction with the terms of the claims by stating that in amending his application on September 1, 1903 (Record, p. 19), and on October 5, 1903 (Record, p. 24), to make it support these claims introduced at that time from the Keiper patent, he applied the term "standard" to the projections A' only and referred to the projections A^3 as "parts" or "ball-retaining points," and that only the standards A' were described as provided with extensions A^2. In the brief filed in the former appeal to this court, appellant said (p. 8):

> Because, argues the commissioner, the Dilg ball retainer, in addition to the standards, is provided also with an auxiliary set of projections that are arranged along the edge of the base that is opposite to the edge from which

> the standards rise, it follows that the standards *provided with extensions* do not rise *from one edge only*. This, we contend, is an untenable position, and is a construction of the claim at variance with appellant's specification; for *the term "standards" is employed only with reference to the parts A′, and never with reference to the parts A*^{3}, which are otherwise designated (see amendment insertion to the specification, pp. 19 and 20 of printed record).
>
> * * * * *
>
> The 14th claim reads, "a series of standards springing from one edge thereof only and provided with * * * extensions." The parts A^3 are not "provided with extensions;" only the standards A′ support extensions, and every standard springs from the same (or from one only) edge of the base.

Not having satisfied any of the tribunals passing upon the case that the term "standard" is not as applicable to the inner projections A^3 as to the outer projections A′, and that the element in the claims under consideration was not consistent with the construction shown in his drawings, which have both series of projections, appellant has abandoned that theory and advances in this suit in equity for the first time a new theory. Appellant now claims to find a warrant for the construction in question in the following sentence of his specification, which he quotes on page 10 of his brief:

> Either the upper or lower portions of said inner or outer projections may be dispensed with, thus reducing the same in size, or, rather, length, and forming either on the inner or outer edge of the ring a series of ridges, which ridges may be made continuous in the form of a rim.

On pages 12 and 13 of his brief appellant has taken this sentence, garbled it in various ways, and then drawn certain constructions which he says are warranted by the garbled sentence from his specification, and claims that forms 5 and 6 show "standards at one edge only," and that the construction of form 6 is similar to that of Keiper.

It is noted that in the sentence from the specification in question the applicant does not state that either the inner or outer projections may be entirely dispensed with, but only that either the upper or lower portion of said projections may be dispensed with, "thus reducing the same in size, or, rather, length."

This extract from the specification now relied upon by appellant is merely one of those indefinite statements found in nearly all applications as filed and put in by the attorney in drafting the specification in an attempt to broaden the application and make it cover inventions never dreamed of by the applicant. No attempt was made in the application to illustrate or give any definite meaning to this expression, and it is omitted from the amended specification (Record, p. 15). None of the tribunals heretofore has found in this sentence from the specification warrant for the construction called for in the claims. Moreover, neither appellant's original attorneys nor his expert, Day, discovered in this sentence warrant for such construction. This remained for the astute attorneys who filed the bill in equity. In view of these facts it is unnecessary to say more to refute the statement found on page 10 of appellant's brief:

> A comparison of figures 5 and 6 of these drawings with figure 2 of Keiper will show at a glance the identity of the construction and thus conclusively show that Dilg had in mind just such a construction.

The statement in the specification now relied upon by appellant affords no better warrant for the construction in question than the portions of the specification pointed out by Day in the following excerpt from his testimony (Record, bottom of p. 54):

> The employment of the ball retainer of figures 2 and 3 without the auxiliary ball-retaining standards A^3 appears to be anticipated in the following statements which appear in the original divisional specification as amended April 24, 1900:
>
> "It is manifest that various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not, therefore, wish to be limited to the specific structural details of the organization herein set forth."
>
> * * * * *
>
> Obviously, my ball-retaining device may be advantageously employed in many kinds of bearings or sockets, and I do not therefore wish to limit myself to the use of my device in connection with ball bearings of the kind shown alone.

Moreover, even if by any stretch of language it could be held that the statement in question from appellant's application discloses a structure with standards on one edge and a flange on the other edge, as shown in figures 5 and 6, page 13, of appellant's brief, there is clearly no warrant in the specification for extensions of the form shown in said figure 6, which form is necessary to meet the flaring extensions called for in the claims, as will more fully appear *infra.*

COMPLAINANT'S APPLICATION DOES NOT DISCLOSE SECTOR-SHAPED OR FLARING EXTENSIONS.

Claims 14 and 16 call for "sector-shaped or flaring angularly arranged extensions," while claim 15 calls for "flaring portions arranged at an angle thereto." The structure relied upon by Dilg to meet this feature of the claims is the portion A^2 extending at right angles to the standard A^3. Is the part marked A^2 a sector-shaped or flaring extension? This question has been answered by the Patent Office and the courts that heretofore considered these claims in the negative. All of said tribunals have given this as an additional reason why the claims do not read on Dilg's device and why he is not entitled to assert these claims of the Keiper patent.

The application as filed describes the parts A^2 as a "tapering extension or top portion or plate," and states (Record, bottom of p. 10) "either of them (A', A^3) also having a preferably tapering extension or top portion or plate A^2." This part was similarly described in all the amendments and claims filed prior to the amendment of September 1, 1903, when Dilg undertook to assert the claims of the Keiper patent. In the amendments of September 1, 1903 (Record, pp. 19 and 20), and of October 5, 1903 (Record, pp. 23 and 24), the extension A^2 is referred to for the first time as "flaring or sector-shaped."

"Flaring" is defined as spreading outward; a terminal or continuous broadening, as of a trumpet or a lily (Century Dictionary). Dilg's extensions are not of this shape. His extensions A^2 (see figs. 2, 3, and 11) converge inwardly from the tops of the outer series of standards A'. They do not flare or spread outwardly from the tops of the standards like the mouth of a trumpet or lily.

Turning to the Keiper patent (Record, p. 76), we find that the extensions *a* flare or spread outwardly from the standards *a'* like a trumpet or lily, instead of converging, as in the Dilg construction.

Appellant contends that the term "flaring" is applicable either to his construction, in which the sides of the extensions converge from the top of the standard, or to that of Keiper, in which they diverge from the top of said standard; that they differ merely in point of view, and that in either case the extensions flare when considered from the center of the retaining ring as a ~~fixed~~ view point. In support of this contention that the term "flaring" has acquired in this art such technical meaning differing from its usual or popular meaning, appellant cites merely the patent to Klahn (Record, p. 80), which in claim 1 calls for "extensions flaring inwardly from the flaps." A single patent in an art can not be taken as fixing the meaning of a certain word. Moreover, in Klahn's construction, although the extensions at first converge, they subsequently change their direction, so that the ends of the extensions undoubtedly flare.

It is submitted that the question of whether an extension tapers or flares is to be judged from the view point or direction of the part bearing the extension and not from some point in space. The gable roof of a house is a tapering extension of the house. From a point in space or the position of a person in a balloon it might possibly be improperly spoken of as a flaring roof, but it could not correctly be called a flaring roof or extension of a house. To make a flaring extension of the extension shown by Dilg, it is necessary to reverse the point of view from that taken by Keiper and take it from a point in space rather than from the standard.

There is absolutely no warrant for appellant's assumption that Keiper in drawing his claims, or the Patent Office in allowing them, had in mind a construction with standards on the outer edge of the base ring and with extensions tapering as in Dilg's device. No such construction is shown or hinted at in Keiper's application.

It is submitted that the claims under consideration clearly and accurately describe the construction of Keiper, and that they are not applicable to the construction of Dilg, but that the latter construction is correctly and properly described by the term "tapering extension," originally used by Dilg, and which describes a construction the opposite of that shown by Keiper.

OPERATIVENESS.

Appellant contends that the holdings of the various tribunals passing upon this case, that the Dilg device with the retainers A^3 omitted would be inoperative, is erroneous. In its opinion on Dilg's former appeal this court, through Mr. Justice Duell, said (Record, p. 42):

> The original application disclosed "standards" springing from both edges of an annular base, and we fail to find the slightest intimation that appellant contemplated the omission of either series of standards. *The construction disclosed required the employment of both series of standards in order to retain the balls.* All the claims in controversy have as an element a series of standards or integral parts extending from one edge of the annular base portion *only.* (Italics mine.)

In view of the fact uniformly held by all the tribunals heretofore that there is no warrant in Dilg's application for omitting either series of projections, it seems unnecessary to discuss the question of whether without both series of projections his device will be operative.

Dilg contends that the adjacent edges of the flaps A^2 which bound the ball-retaining space between the extensions, instead of being parallel, converge toward the center of the ring, and will therefore retain the balls in place without the projections A^3. He endeavored to establish this point by the testimony of the witness Herzog (Rec., p. 47). This witness drew some lines upon the drawing of the parent application to show that the adjacent edges of the flaps A^2 converge, which drawing has been introduced in evidence as "Complainant's Exhibit F" (Rec., third drawing between pp. 74 and 75). The alleged convergence, if any, is infinitesimal, and the witness himself had to use a magnifying glass to detect it. The drawings of patents are addressed to the eye of the ordinary observer. They are not drawn to a scale like working drawings, but they stand for what they clearly show. The alleged convergence is certainly so slight that it is questionable whether it is anything more than an error of the draftsman. In Keiper's patent the flaps *a* are of peculiar form and pass around the balls and retain them from outward displacement. The contention of appellant appears to be that the extensions of his device converge sufficiently to prevent inward spilling of the balls. As a matter of fact, the Dilg application does not state that the flaps converge to retain the balls, nor does the drawing clearly disclose it. Indeed, appellant's expert, Day, on cross examination (X Q. 40) admits that the alleged convergence in his Exhibit J (Rec., p. 74), especially prepared for the purpose, will not retain the balls. The witness Dilg subsequently attempts to repair this damaging admission by stating that the ball is not shown of proper size (Q. 15). The question, however, is not what Dilg might have done to make the Keiper invention, but whether his application as filed actually discloses it.

It is further pointed out by appellant that by bending down the points of the extensions A^2 they will retain the balls in place without the standards A^3. It is sufficient to state that no such construction is hinted at in the Dilg application.

Furthermore, appellant attempts to show that if his device with the projections A^3 omitted will not retain the balls or prevent them from spilling inwardly, it still has utility in keeping the balls properly spaced in the bearing. This, however, is not the invention that either Dilg or Keiper describes in his application. The invention there described is a ball-retaining device which holds the balls in place in all directions.

SUBCOMBINATION.

Appellant contends that even if there is disclosed in his application only a structure having projections upon both edges of the base ring, and that the claims do not properly define his structure as a whole, he is still entitled to the claims as subcombinations of his preferred structure, and that it is immaterial in this view of the case whether the subcombination defines an operative structure *per se.*

Appellant in support of this contention states that the claims define the structure upon one edge of the base only and are silent as to what may exist on the other edge. In this, however, appellant is clearly in error. The claims call for standards, not on "one edge," but "on one edge thereof only." The claims as worded are "not silent," but do state a limitation as to the second edge, viz, that there shall be no standards thereon. To be sure, this is a negative limitation, but it is nevertheless an essential part of the claims. To meet the structure of the claims there must be projections upon one edge and no projections upon the other edge of the base. Since appellant's device has projections upon both edges of the base, the claims will not read thereon, even as subcombination claims. To illustrate further: Appellant's device may be said to correspond to a chair with legs upon both the front and back edges, or to an ordinary chair with four legs, and the device of Keiper to a chair with legs upon the front edge only and supported at the rear edge by brackets from a wall. The latter chair has legs upon "one edge only," and while the former chair has legs upon "one edge" it clearly does not have legs upon "one edge only."

It is submitted that the claims even as subcombinations would not read upon appellant's device, and that he therefore has no right to make the same.

ALTERNATIVENESS.

Dilg has been allowed claims in this application which cover both series of projections shown on his device—that is, claims calling for projections upon both the inner and outer edges of the base. In fact, as heretofore pointed out, all of the claims presented in the application prior to the Keiper claims in question called for the series of projections upon both edges. The Keiper claims, which Dilg now contends for, are clearly for an alternative structure in that they call for the projections upon one edge only. These claims are not silent as to what may be upon the other edge and are not readable upon a structure having projections or standards also upon said edge. The two sets of claims are clearly alternative in that they call for different structures or species of devices. Even if Dilg clearly disclosed the alternative form having projections upon one edge only, he would not, under the well-established practice of the Patent Office, be allowed to include in one application both sets of claims—that is, claims specific to the two alternative species—on the ground that they are for different and distinct inventions. Keiper disclosed a species differing materially from that of Dilg and took out his patent with specific claims therefor. Dilg's device, although belonging to the same class as Keiper's construction, is a different species, and he has claims allowed which include these specific differences. He also contends (Brief, p. 30) that he has been allowed broad claims dominating the Keiper invention. Not content with these claims, however, he contends that he should be allowed the specific claims of Keiper, claims which correctly define the characteristic features of Keiper's device and which are clearly unwarranted by any disclosure in the Dilg application.

THE TESTIMONY.

Apparently Dilg realized the weakness of his contentions and that he could not hope for a decision in his favor in the present suit upon his former record. He has, therefore, in the present record, added to the former record the depositions of a draftsman, Herzog (Record, p. 47); an alleged expert, Day (Record, p. 49); the original solicitor, Fowler (Record, p. 65), and the inventor's son, Dilg (Record, p. 70).

By the witness, Herzog, complainant attempted to prove that the adjacent edges of the extensions A^2 converge, as heretofore noted.

The original attorney, Fowler, testified as to what he intended to state in the application. The question is not what may have been intended, however, but what is actually disclosed therein.

Dilg, jr., undertook to explain the failure of his father, the inventor, to appear and testify.

In his direct testimony the hired expert, Day, of course undertook to corroborate all of the various contentions that have been advanced as to the meaning of the language of the Dilg application and of the Keiper claims, and how the latter is applicable to the Dilg construction. On cross-examination, however, this expert, Day, admits that the radial retention of the balls by the top extensions A^2 was not disclosed in the Dilg application as filed (X Qs. 30 to 40). He further states that the Dilg device as disclosed has standards on each of its edges, and that the inner standards are for the purpose of retaining the balls from falling inward. He admits that the Dilg application as filed contained no express statement that one series of standards might be omitted, as Dilg now contends they might in his endeavor to show that he is entitled to appropriate the specific invention of Keiper (X Qs. 20 to 25). It thus appears that, when pinned down to facts, he confirms the actions of the Patent Office; and it is submitted that the uniform holding made by the various tribunals based upon these facts is the only legitimate conclusion that can be drawn therefrom.

The defendant took no testimony. He considered that in the matter of expert opinion the opinion of Dilg's expert, Day, is far outweighed by the opinions of the primary examiner, the three examiners-in-chief, the Commissioner of Patents, and the three members of this court, all of whom are experts in interpreting claims and passing upon inventions, and that it was unnecessary to add anything thereto. It is certainly significant that the five different tribunals that have already passed upon the case formed the *same* opinion of the Dilg invention and disclosure, as will appear from the excerpts given below from their decisions.

EXTRACTS FROM THE OPINIONS OF THE PATENT OFFICE TRIBUNALS, THE COURT OF APPEALS, AND THE SUPREME COURT OF THE DISTRICT OF COLUMBIA.

The opinions of the several tribunals that have heretofore passed upon the case, contained in the record, are full, clear, and convincing. Special emphasis is called to the following extracts therefrom. The examiner states, pages 32–33 of the record:

> It is plain from applicant's construction and his original specification that he never before Keiper's patent appeared contemplated having "a series of standards springing from *one edge only*"; and it is equally plain that he has neither shown or described standards "provided with sector-shaped angularly arranged extensions." The thing applicant has would be utterly inoperative and useless with standards "at one edge only."
>
> That applicant never contemplated using standards "at one edge only" is proven by the fact that before Keiper's patent appeared he had made his present claims 3, 4, 5, 6, 7, 8, 9, 10, 11, each of which includes as elements *two series of projections* for retaining the balls in position. These latter claims and the appealed claims

> are clearly alternative to each other, and could not be properly allowed in one application even if they were warranted.
>
> * * * * *
>
> Attention is asked to the facts that Dilg has detained the parent case (this is a divisional application) in the office more than six years. Keiper's patent has been in existence over two years. Dilg has, as already intimated, discovered since Keiper's patent issued that he (Dilg) has "standards on *one edge only*," and yet he has been claiming the "standards" *on both edges for years.*
>
> * * * * *
>
> In Dilg the part A^2 is *tapering* instead of *flaring*, and he neither shows nor describes such a construction.
>
> * * * * *
>
> Before passing Keiper's application to issue it was carefully compared with both Dilg applications with a view to interference proceedings. It was then found that none could be properly declared, and it is now believed that conclusion was correct.

In the opinion of the examiners in chief it is stated (Record, p. 35):

> Furthermore, appellant does not disclose a construction in which a ring-shaped portion or base and a series of standards and angularly arranged extensions form spaces for receiving and *confining* balls between adjacent standards. As already indicated, the ball receiving and *confining* spaces or pockets of appellant's construction are formed not only by these parts, but by the projections A^3 which extend from the inner edge of the base. There is no suggestion anywhere in appellant's specifications that these projections A^3 may be dispensed with, or that the ball receiving and confining pockets are complete without them. As a matter of fact the ball receiving spaces which lie beneath the tapering extensions would, if these projections A^3 were eliminated from the construction, cease to be ball confining spaces.
>
> * * * * *
>
> The language of the claim is perfectly clear when applied to Keiper's construction, but when an attempt is made to read it upon Dilg's construction it is at once seen that only by an extremely forced interpretation can it be made to apply thereto, and that even then it excludes the projections A^3 which are an essential part of Dilg's mechanism.

The Commissioner stated, near the end of his opinion, (Record, p. 38):

> Another positive requirement of these claims is that the angularly arranged extension of the standards be "sector-shaped or flaring." Keiper shows such a construction wherein this peculiar arrangement of the ends of the standards performs a very useful function in the combination set forth in his claims. When attempt is made, however, to read these claims upon the construction shown and described by Dilg, it is found that instead of having the ends of his standards "sector-shaped or flaring," they are pointed or tapered.

The case is well summed up in the following extract from the opinion of the Court of Appeals (Record, p. 42):

> The original application disclosed "standards" springing from both edges of an annular base, and we fail to find the slightest intimation that appellant contemplated the omission of either series of standards. The construction disclosed required the employment of both series of standards in order to retain the balls. All the claims in controversy have as an element a series of standards or integral parts extending from one edge of the annular base portion *only*. This is such a radical departure from the invention as originally shown and described that it is clearly unwarranted and, standing by itself, would have been sufficient ground for the adverse action of the office. There is, however, another fatal departure from the original disclosure. In the amendment of October 5, 1903, the appellant injects into the specification a statement, in substance, that these standards have extensions or top pieces which are "sector-shaped or flaring." He originally disclosed only straight-sided extensions, and the change is clearly not warranted by anything found in the drawing.

The Supreme Court of the District of Columbia, upon the present bill, said (Record, p. 85):

> The question involved is whether these claims describe anything disclosed in his original applications.
>
> The law is well settled to the effect that patents must be restricted as to matters of substance to what was disclosed in the original application.
>
> *Railway Co.* v. *Sayles*, 97 U. S., 554.
>
> *In re Dilg*, 25 App. D. C., 9.
>
> So that the question here involved is whether Dilg's application for a retaining ring having a series "of inner and outer flaps * * * to confine the balls"—that is,

> one series of projections which arise from both the inner and outer edges of the base ring, warrants an amendment which refers to a series of standards springing from one edge only.
>
> It seems to me this is entirely a question for expert testimony. And in this conclusion I am sustained by the action of the plaintiff in this case. In the only testimony of any importance which he has added to the record heretofore made is that of an expert to the effect that plaintiff's original claims warranted the inclusion of the contested claims Nos. 14, 15, and 16.
>
> But if the question is one for experts, I should feel that I stood on more solid ground if I accepted the disinterested views of the primary examiner, the examiners in chief, the Commissioner of Patents, and the Court of Appeals (Mr. Justice Duell writing the opinion), all of whom held that the contested claims were not covered by either of plaintiff's original claims, rather than the unsupported views of Mr. Day, who was the plaintiff's expert, and the sole witness upon this crucial point in the case.
>
> All these disinterested experts hold that plaintiff's original application gave him no right to include the claims of Keeper's patent.
>
> I will therefore sign a decree dismissing plaintiff's bill.

It is respectfully submitted that the case is now before this court upon substantially the same record as on the appeal from the Commissioner of Patents, that nothing has been added to the former record that should lead this court to change its prior opinion, and that the judgment of the court below should be affirmed.

WEBSTER S. RUCKMAN,
Counsel for the Commissioner of Patents.

OCTOBER 11, 1909.

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